THE

NAVAL MAGAZINE.

JANUARY, 1836. VOL. I.—NO. 1.

"Tam Minervâ quam Marte."

EDITED BY THE

REV. C. S. STEWART, M. A.

AIDED BY AN ADVISORY COMMITTEE.

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EDITOR'S ADVERTISEMENT.

A MOMENTARY glance at the articles composing the number of the "Naval Magazine," now placed before the public, will at once show that the agency of the Editor, in the production of the work, has been almost exclusively mechanical and supervisory.

To assume the responsibility of furnishing, from his own resources, the material for a publication of the kind, and of sustaining its respectability, by the labor of his own pen, would be utterly impracticable, in connection with the right discharge of the duties of the professional appointment he holds, and with other engagements already formed, involving constant claims upon his time and attention. Persuaded, however, of the interest and high advantage which may be made to attach themselves to a periodical publication, issued under the auspices of the "Naval Lyceum," and of the abundant talent and intelligence there is in the Navy, for its honorable support, he has most cheerfully acceded to the proposition of superintending the Magazine—of revising, arranging, and preparing for the press, such matter as may be placed in his possession, and of imparting to the work all the spirit and character his leisure and ability can command.

The objects and design of the Naval Lyceum are well set forth, in the introductory article, by a prominent member of the institution. The Magazine is regarded as a chief auxiliary in securing its desired results; and while the Editor will not fail himself to contribute as largely as practicable to the work, and will spare no labor to render it worthy of patronage, and successful in its end—adopting the language of a Circular of the Committee of Publication, with which

the article referred to closes—he would avail himself of this occasion, in the new position he has assumed, "earnestly and indiscriminately to invite every gentleman in the service, who deems himself qualified by his ability to contribute to the currency of the work, to come forward to its aid;" and respectfully "to solicit from all his fellow officers such original papers as they can be induced to furnish—

"On all subjects, directly or collaterally, connected with the elucidation and diffusion of Nautical and General Science, and professional knowledge; whether in reference to Astronomy and Navigation; the construction, stowage, and equipment of ships, either for the Naval or Merchant Service; or to their police and discipline.

"Essays upon the moral, physical, and exact Sciences, in their various relations; in the departments of natural history; and in geography and statistics.

"Articles in Polite Literature; embracing original tales, whether of an imaginative or real character; sketches of cruises; accounts of excursions into the interior of different countries; and visits to points of striking interest, in the development of national customs and character.

"With, Reviews, Biographies, and such other matter, as ordinarily make up the contents of a Magazine."

NEW-YORK, January 1, 1836.

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NAVAL MAGAZINE.

VOL. I. JANUARY, 1836. No. 1.

U. S. NAVAL LYCEUM.

IN presenting to our readers the first number of the "NAVAL MAGAZINE," as a periodical publication of the United States' Naval Lyceum, an exposition of the origin, progress, and purposes of that institution, seems naturally due, and authorizes a brief history of its formation and advancement.

At the close of the year 1833, the officers attached to the Navy Yard at Brooklyn, with resources greatly limited both as to numbers and in fiscal ability, hazarded the enterprise of founding this Association. The motives which prompted them to the undertaking, and the objects had in view, were, succinctly, to elevate and adorn the character of our Navy, by placing within the grasp of its officers the means of acquiring professional and general information, with greater facility than had previously been possessed; to stimulate the members of the profession, by creating a common interest in the result, to new energy in the steady and zealous pursuit of knowledge, as the grand source of moral power; and to bind yet more closely the ties which unite them, by erecting a National Society, in promoting the prosperity of which, all might find employment for their faculties of thought and action, and from which, as a common centre of effort, might radiate in broad and distinct lines, the issues of their various tastes, pursuits, and discoveries; and thus, by a general and pervading sympathy, to augment the harmony, and excite the *esprit du corps* of the service.

A hasty organization led to the adoption, in the first instance, of a constitution and by-laws, which experience proved to be imperfect and inconvenient. The whole subject was anew referred to a special committee; a more perfect plan of government was devised, and, after a thorough examination and discussion, accepted. This instrument, a copy of which will be found in the Appendix, having proved fully competent to secure the welfare and stability of the Lyceum, forms its present system of laws.

By the constitution, an entire equality of privilege is secured to every member, in every thing that legitimately pertains to the business of the Association, and perfect independence of opinion and action is guarantied by vote by ballot. To guard against hasty and inaccurate legislation, it is provided, that all original resolutions shall, before receiving the final action of the Society, be referred to "a Committee of Administration," to be reported upon to the Lyceum for confirmation or reversal, as the case may be. This Committee being composed of the principal officers of the Society, and the Chairmen of its different Committees, every department is directly and adequately represented, and the interest of all alike maintained and protected.

A sufficient barrier to innovation and change was provided, in the fundamental organization of the Society, by the introduction of an article, which declares that "no alteration shall be made in the Constitution, unless by a vote of three-fourths of the resident members; and, then, only upon the request, in writing, of one-third of their number, submitted to the Society at least one month previous to the taking of a vote thereon"—an operation, necessarily, of time and deliberation.

The meetings of the Lyceum, for business, are held weekly, and in the proceedings, the rules of order, which govern all deliberative bodies, are adopted and enforced. The terms of admission to the Association and of membership, are reduced to a standard not likely to embarrass the means of any officer; and the revenue thus derived, through the judicious economy practiced in its expenditure, has proved, not only ample for all current and contingent expenditures,

but has furnished a surplus sum for the basis of a permanent fund, to meet any extraordinary exigence that may hereafter occur. The accounts are guarded by a quarterly exhibit of the Treasurer, under the supervision of a Committee of Finance; and effectual security is afforded, for the identity and preservation of property, by a law which requires, that exact records of all articles, whether purchased, received on donation, or in deposit, shall be punctually kept, by the Curators of the different departments, and annual reports of their condition be furnished by them.

An act of incorporation, granted during the last session of the Legislature of the State of New-York, secures to the Lyceum the exercise of all necessary legal rights and privileges within this jurisdiction; and, should it be found expedient, a similar indulgence may hereafter be solicited from the General Government of the Union.

At an early period after its organization, public attention began to be steadily attracted to the institution. The kindness of the Navy Department at Washington was manifested by the appropriation, to its use, of rooms in one of the public buildings at the Navy Yard, at Brooklyn. The officers of the service, in general, in their wide dispersion at home and abroad, extended their prompt patronage and favor; and the extraordinary generosity of the citizens of New-York and Brooklyn, in the constant transmission of valuable books and materials, for cabinets in nature and art, and the simultaneous assistance of disinterested individuals in other sections of our country, soon placed it on a firm basis, in its resources and character, and contributed to give impulse and rapid acceleration to its progress.

The actual condition of the Lyceum, which we proceed briefly to develop, will show that, from the constant accumulation of materials for the diffusion of useful and ornamental knowledge, and by the expansive energy of its designs, it already begins to occupy an interesting, if not imposing position, among the distinguished literary and scientific institutions of our country; and, in its success, far surpasses, in so short a period, the most sanguine anticipations of its founders.

A library, of a most valuable and comprehensive character, including a liberal supply of books strictly professional, has been collected, and is daily increasing, by purchases, and by donation. A circulation of this is granted, among the members of the Lyceum, with customary restrictions and penalties. It is already sufficiently large for all practical purposes; and the additions hereafter to be made, will, with some few exceptions, be ornamental, rather than indispensable. Extensive cabinets of minerals and shells, arranged and classed with scientific technicality, with many choice, and some rare specimens of ornithology, adorn the rooms of the Society. Large collections of curiosities, in the rude, but ingenious exhibitions of skill, in the fabrication of ornaments, articles of dress, and utensils of peace and war, which characterize uncivilized life, have also been secured. In these, it will be difficult to limit the ratio of increase, as the Society augments in resources, by a multiplied interest in its welfare, and a remembrance of its claims on the part of its members, in their visits to every region of the globe.

The apartments of the institution furnish the additional attraction of a collection of valuable paintings, embracing, with some admirable copies, several originals, of a very superior and costly character, by eminent artists. These are chiefly in deposit, at present, but there is reason to believe, that a greater part of them, through the liberality of their owners, will ultimately become the property of the Lyceum. An interesting and highly valuable addition has recently been made to the collection, by the munificent donation, from a gentleman of the city of New-York,—Luman Reed, Esq.—of a complete set of the portraits of the Presidents of the United States: copies, by a distinguished artist of the city, from approved and celebrated originals, chiefly from the pencil of Stuart.* Encouragement is given to individuals,

* This donation was accompanied by the following communication:

To Commodore Charles G. Ridgely,
President of the U. S. Naval Lyceum:

SIR—I respectfully request the acceptance, by the United States' Naval Lyceum, of the accompanying portraits of the PRESIDENTS of the UNITED STATES.

by the Constitution of the Society, in like manner, to place both books and components for cabinets in natural history, in deposit, not to be removed from the apartments, and to be reclaimed at the pleasure of the proprietors, without the risk of defalcation or injury.

Written communications, tending to the advancement of general and professional knowledge, are invited to be addressed to the Society, to be read, after reference to an appropriate Committee, to the members, at its meetings. The most valuable and most important newspapers and periodical publications of the day, are always to be found on the reading table; and every effort is made to render the rooms of the Lyceum at once a favorite and improving resort of the gentlemen of the Navy, and an object of attraction worthy the notice, both of our neighboring fellow-citizens, and of the passing stranger.

Such, briefly, was the organization, and such is the present condition of this Association. But we must avail ourselves of this occasion, to enlarge, in some degree, upon the design and utility of the institution, and its probable influence upon the character of the Navy. This will depend

I shall feel honored in their reception by an institution, whose objects are so important and interesting, and whose character is so truly national.

I deem it proper to annex a statement authenticating the originals and copies of the series.

With best wishes for the prosperity of your Association,

I am, respectfully,

Your obedient servant,

LUMAN REED.

NEW-YORK, Dec. 14, 1835.

The portraits of Washington, the elder Adams, Jefferson, Madison, and Monroe, are copies made by Asher B. Durand, Esq., of this city, from originals by Gilbert Stuart; that of Washington, from the one now in the possession of the Boston Athenæum; that of the elder Adams, from the one in the possession of his son, the Hon. John Quincy Adams; that of Jefferson, in the possession of his daughter, Mrs. Randolph; that of Madison, in the possession of Bowdoin College; and that of Monroe, in the possession of Lloyd N. Rogers, Esq., of Baltimore. The portraits of the Hon. John Quincy Adams, and President Jackson, are originals, painted by Durand, that of Adams in the month of June, and that of President Jackson in the month of March, of the present year.

LUMAN REED.

upon its plans, and the means at its command, of putting them in execution.

The design of the Association has already been concisely stated, in the motives which led to its organization. The entire scope of its plans may be recapitulated in a few words: it is, to incite the officers of the service to increased diligence in the pursuit of professional and general knowledge; to furnish to them, as far as practicable, additional facilities for the advancement of science; and to secure the means of giving publicity and perpetuity to any improvements or discoveries they may make, in the wide range of their professional avocations.

The facilities which the Lyceum proposes to offer, in the prosecution of scientific research, will be in the form of instructions, more ample and more minute than can ordinarily be obtained, to aid the commanders and other officers of our national vessels, and the gentlemen of the merchant marine, in the close investigation of all natural phenomena; in the careful observation of the weather in different meridians and parallels, the better to determine the prevailing temperature and winds; in the nicer uses of astronomical and philosophical instruments, to obtain satisfactory illustrations in the perplexed theory of refraction, and the progressive, but crude science of meteorology; and, to a commercial people, in the yet more important, but abstruse laws, which govern the variations of the mariner's compass, the intensity of the magnetic forces, and the dip of the needle. The Lyceum will, in this manner, zealously foster every research and inquiry, having a tendency to contribute to the enlargement of the boundaries of nautical and geographical science; and will strive, especially, to promote the philosophical investigation of the principles of operative mechanics, in reference to naval architecture, and practical seamanship.

That the gallant and enterprising Captain Beechey, in a voyage of three years and a half, in command of H. B. M. ship Blossom, should discover six islands, and delineate six hundred miles of unknown coast, in itself proves,—without adducing other instances of the kind, of modern date,—that further discovery may yet be anticipated, in long and remote

voyages. To this object, the Society will extend earnest solicitation and encouragement; also, for the accurate determination of the latitude and longitude of places already partially known; for the survey of coasts and harbors, and for the procurement of any information, characteristic of the physiology of plants, minerals, and other productions of nature, both in known and imperfectly known sections of our globe.

In the prosecution and consummation of these great and useful objects, the co-operation of every branch of the Navy is respectfully and most earnestly invited. In gratefully acknowledging the prompt patronage of the service in general, it is gratifying to state, that we have already attracted the notice, and received essential aid from individuals of distinction, belonging to many of the principal cities of Europe; a cheering proof of the homage paid to knowledge, in every civilized nation and tongue, and the efforts made to promote its advancement. It is a common parent, and has a common progeny.

In the departments of zoology, botany, and mineralogy, the ardent mariner, of our mercantile as well as national marine, may levy contributions on every region visited by him, in his eccentric career. We dwell with admiration upon the spontaneous industry and enterprise of the elder and the younger Scoresby, who, in command of Greenland whalemen, manifested, for a series of years, a zeal and a discrimination in procuring information and materials, in the polar regions, which essentially subserved the progress of geographical and geological knowledge, and which, considering the limited means at their command, and the restraints and embarrassments of their commercial obligations, indicated an intrepidity of pursuit and discovery, which may challenge comparison with the persevering energy that has given immortality to a Ross, a Parry, and a Franklin. The splendid success of the Scoresbys, whose names are identified with the proudest memorials of British enterprise and geognostic science, fully shows to the enterprising commanders of our merchant ships, the essential aid they may render the Naval Lyceum, by an active use of the vast opportunities their

voyages present, of accumulating valuable information, and securing specimens in the workmanship of nature, drawn from her laboratories, in remote, and perchance, yet unknown regions, characterized by the distinctive differences which seem uniformly to mark her productions, in the different portions of the earth.

It will be a prominent object with the Society, to furnish directions for the right preservation, and for the bringing home in a perfect state, to an enduring repository, in which their peculiarities may be detected and elucidated, all such products, whether of the vegetable, animal, or mineral kingdoms. Every addition of the kind, in seeds, plants, shells, minerals, animals, or geological formations, to the cabinets of the Lyceum, will be gratefully acknowledged, and may be made essentially to contribute to the advancement of that most interesting and most instructive of pursuits, the study of natural history, in its broadest and most comprehensive sense.

The Naval Lyceum undoubtedly derives consideration from the fact, that it has originated with a class of men, endowed, by their occupations, over all other members of the body politic, with the greatest variety and universality of resource for the accomplishment of its ends. There is no department of life, in which the moral and physical energies of man may be displayed to greater advantage, than in the navigation of the sea; and few items in the vast sum of human knowledge, which may not be subsidized to some useful purpose, by the practical sailor. The whole range of natural philosophy is inseparably connected, either usefully or ornamentally, with his employments; and its primary principles are in perpetual operation before him, whether he refers to the stupendous piece of mechanism in his own ship—justly denominated the highest art of man—and her wonderful progress over the broad expanse of the ocean; reads, by the aid of his instruments, and mathematical combinations, his course, in the starry canopy of the heavens, and points the index of his voyage; ponders upon the subtle laws of attraction and hydraulics, in reference to the tides and currents of the sea; or strives, by the speculations of philosophy, to calculate the force of the polar and equatorial influences, in

producing the sensible currents of the atmosphere, and the more violent and destructive winds, which render navigation dangerous, and make

"Castles topple on their warders' heads."

Nor can there be a more glorious exhibition of physical power, than that of the mariner, struggling to preserve his frail bark from the whirlwind; nor a position conceived, requiring more imperturbable presence of mind, and a greater concentration of thought, and energy of action.

The author of "A Year in Spain," in his popular essays on naval subjects, furnishes so just and animated a description of the perils of navigation, and of the energy required to overcome them, that we cannot forbear introducing an extract.

"Horace," he remarks, "has well said, that his heart must needs have been bound with oak and triple brass, who first committed his frail bark to the tempestuous sea. Nothing, indeed, conveys a higher idea of human daring, than the boldness with which man rushes forth to encounter the elements; nothing speaks louder in praise of human ingenuity, than that wonderful art by which he is enabled to forsake the land, stretching forth until it fades from the horizon, and nothing visible remains but the hollow heavens above, and a trackless waste below; driven from his course by adverse winds, yet, by dint of perseverance, wearying out the elements; and at length arriving, with unerring certainty, at the haven where he would be. And if the daring and ingenuity of the navigator deserve our admiration, the result of his efforts will not appear unworthy of the means. It is to the exercise of his wonderful art, that we are indebted for the improvement of our condition, arising from the exchange of the superfluity of one country for that of another; the whole world being penetrated, and every clime made tributary to every other, until the entire globe is reduced to one common country. Above all, to navigation are we indebted for that higher and nobler advantage, the interchange of sense and sentiment, which makes wisdom common to the world, and urges man onward to perfection."

But it is not the philosophy of nature, only, which the mariner and naval officer has to learn; or to attainments in which the Lyceum would limit its facilities and encouragement; but the philosophy of the human passions, also, and of the mind, in connection with the physical and intellectual organization of his species. To establish a sound and vigorous system of discipline, is among his paramount duties;—for he is not only responsible for the propriety of his own conduct, but in the comprehensive analysis of his accountabilities, he is required to control, by precept and example, the conduct of others. Endowed, from the very necessity of his position, by the laws of his country, with powers certainly of no very limited character, he has to practice the cardinal art of self-government, that he may manage, with skill and effect, and to ultimate public and private benefit, the heterogeneous mass of individuals under his direction and guidance, exhibiting human nature in all its phases and varieties of capacity, both in mental and bodily constitution. This, it is evident, can be no easy task; and requires no little penetration and familiarity with the springs of human action, and the subtle influences of the passions, constituting, what may be denominated, the metaphysics of our nature.

The representative of his nation abroad, sometimes in critical emergencies, which lead to discussions of difficult, and perhaps unsettled questions of international law, the enlightened knowledge of the naval commander becomes, not unfrequently, the touchstone of the honor of his flag. If ignorant of the provisions of subsisting treaties, and of those fundamental principles of natural law, which form the groundwork of the maritime codes of civilized people; or, if unacquainted with those conventional customs which have originated in the exigencies of commerce, and acquired, by long usage, the sanctions of positive law, though he may be imbued with the most chivalric temperament, and animated with the most patriotic and eager desire to sustain the honor, and promote the solid interests of his country, he may incontinently compromise that honor, and sacrifice those interests, by a disregard, or abandonment, of established or contested rights and privileges, which, if correctly perceived and ap-

prehended, would have been strenuously, and, perhaps, successfully, asserted and enforced.

A gallant champion of our Revolution—Paul Jones—had, with all his enthusiasm of conduct and character, but a limited idea of the essential qualifications of an intelligent and competent naval officer, when he remarks, that "none other than a gentleman, as well as a seaman, both in theory and practice, is qualified to support the character of a commissioned officer of the Navy; nor is any man fit to command a ship of war, who is not also capable of communicating his ideas on paper, in language that becomes his rank."

We would impress upon the younger officers of the Navy, especially, the advantages they may derive from a diligent cultivation of the means of advancement in professional and general information, presented by the Naval Lyceum. They can render important aid in the promotion of its plans, and, by an active interest in its progress, will insensibly confirm in themselves a taste for pursuits and studies of the most satisfactory and profitable character; and which will not only give them currency and consideration in society, as they advance in life, but have a tendency, under all circumstances, to preserve them from the seductions of pleasure, and from dissipation, too often the profligate companion of the indolent and the uninformed.

The enlarged national policy, in reference to the general improvements of the country, which has recently distinguished our Government—involving naval co-operation in the important survey, regulated by the most erudite science and research, which is now making of our whole coast, under the auspices of Mr. Hassler—has already given employment to many of the junior officers of the service, and will be an incentive to application and diligence, on their part, to qualify themselves for this and similar arduous and beneficial duty. Though deprived of the facilities of education which a naval academy, founded upon enlightened principles, would afford, and which will continue to be a desideratum in the service, not to be forgotten or abandoned, they may cherish a confidence in the liberal disposition of the Department, and present Secretary of the Navy, to promote, by all the means

in his power, their opportunities for information and improvement.

The reflection, that the early period in which they embarked in the service, has debarred them the privileges of an academical education, so far from being permitted to operate as a discouragement, in the ardent pursuit of knowledge, should be made an incentive to it, by the remembrance, that however desirable a collegiate course of instruction may be, its highest result, as such, can only be, to familiarize the student with the elements and machinery of knowledge: its practical utility and ultimate value, after all, must depend on the diligent research and mental application of after-life. Illustrious examples daily occur, of pre-eminent success on the part of men, who have been literally self-taught, or have had very limited early instruction. The beautiful letters of Lord Collingwood, are a splendid specimen of what may be achieved by a conscientious obligation of duty, and persevering pursuit of knowledge; and we especially commend them, in their spirit of patriotism, professional ability, and elevating and ennobling principles, to the perusal of the youth of our Navy.

We would further exhort them to study, patiently and perseveringly, the more difficult and abstruse science of their profession; and not to be content to let their knowledge of navigation and mathematics depend upon a familiarity with the axioms of plane trigonometry, and a limited acquaintance with spherics. We would urge the diligent cultivation of natural history, and of philosophy, by the process of investigation, which traces, in a course of unerring induction, the dependence, throughout the whole course of nature, of causes and consequences upon primeval and immutable laws. We would admonish them that excellence, in any thing, can only be attained by unwearied zeal and industry; and the more these qualities are exerted, the higher will be the reward. "If I have aught of superiority over other men," said the father of experimental philosophy, "I owe it to diligence, and patient study, and thought."

We would inspire them with elevated and ennobling ideas of the dignity and importance of their profession, when pro-

perly understood and cultivated, by showing its essential connection, not only with the higher departments of art, but with those of moral and physical science, also; and whilst we direct them to the BOOK OF INSPIRATION, for the purest precepts, and only unerring principles of the former, would beg them to seek, in the BOOK OF NATURE, perpetually spread before them, with all its rich imagery of dress and contrivance, the treasures of the latter, and to glean from its pages the copious and delightful instruction they afford to all, who intently regard them, with faith in their own powers, and with gratitude to the immortal Being who spreads His works before us, in such glorious exuberance, and gives us perception and reason for their right use and enjoyment.

To furnish encouragement and facilities to these high and desirable results, has been a leading motive to the publication, by the Naval Lyceum, of the Magazine now introduced to the public. Such a publication is deemed an essential, and it is believed, may be made a powerful auxiliary to its designs. In soliciting the patronage of the service for it, we earnestly, and indiscriminately, invite every officer, who deems himself qualified to contribute to the currency of the work, to come forward, and aid, by his ability, the objects of the Institution. The "Committee of Publication" have given the widest practicable range to the Prospectus of the work, that ample scope for versatility of talent might be secured; and every individual in the Navy may consider himself addressed, when they respectfully "solicit from all their fellow officers, such aid as they can be induced to furnish, in original essays and contributions, coming under any of the following heads:

"On all subjects directly or collaterally connected with the elucidation and diffusion of nautical and general science, and professional knowledge—whether in reference to astronomy and navigation, the construction, stowage, and equipment of ships, either for the naval or merchant service, or to their police and discipline. A history of recent improvements and discoveries, in any of these branches, will be particularly acceptable.

"Essays and illustrations upon the moral, physical, and

exact sciences, in their various relations; in the department of natural history, in reference to animals, minerals, plants, shells, and geological formations; and in geography and statistics.

"Articles in polite literature; embracing original tales, whether of an imaginative or real character. And, as the object is to give a popular character to the work, both on the score of amusement, as well as instruction, the experience of the officers of the Navy may be effectually superadded, by their furnishing an account of interesting incidents, connected with their long and varied cruises, in the form of sketches of their frequent excursions into the interior of countries; and their visits to points of striking interest, in developing national customs and character—such as Lima and Valparaiso, in the Pacific, the Islands of the South Seas, the romantic shores of Sicily, and last, though not least, Port Mahon, and the Balearic Group.

"Reviews, biographies, and such other matter, not enumerated, as ordinarily make up the contents of a Magazine."

It is confidently believed, that there is an abundance of talent in the Navy, for the successful support of such a work; and with proper zeal and industry, on the part of those capable of affording the desired assistance, in bringing it to the aid of the "Committee of Publication," a new and powerful impulse may be given to the diffusion of useful and ornamental knowledge in the service, by which its character will be exalted, and a higher estimate formed by the public, of its capacities, attributes, and legitimate tendency.

COMPARATIVE RESOURCES OF THE AMERICAN NAVY.

By a Citizen—an honorary member of the U. S. Naval Lyceum.

THERE exist, in the histories of States, periods of infancy, adolescence, youth, manhood, and decadency, as in that of the human frame, in its progress from childhood to decay. In former ages, and under ordinary circumstances, these transitions have been gradual, society usually exhibiting the several aspects of barbarism, feebleness, improvement, and civilization, before it attains the complete developement of its powers, leaving behind a long and eventful history, which, commencing in obscurity, becomes brighter and more distinct with the growing intelligence of its members.

Little of this common fortune, however, has marked the career of America. We have had to encounter the hardships and privations of subduing a wilderness, it is true; but our fathers brought to the task a knowledge of all the contemporary arts of life, and principles that, to say the least, were fully equal to the best of the century in which they lived. From the hour of their arrival in this hemisphere, to the present moment, the advancement of society has been commensurate with these great means, and the results are of a character to induce the most profound reflections, and to inspire the deepest gratitude.

Thousands yet live, who remember these States as Colonies, and, perhaps, a majority of those who are still engaged in active life, can look back, as if it were but yesterday, to the time when necessity, no less than prudence, compelled them to regard the country as a third, or even a fourth rate power. That day is already past, and the time has arrived when America, without an impeachment of her sagacity or discretion, may begin to think of taking her station by the side of the foremost nations of Christendom. Facts have outstripped calculation. The habits of the mind have not kept even pace with the changes of our situation; and while we are, in truth, able, in every sense, and, we trust, as willing

as men ever ought to be, to assume an attitude worthy of our best principles and high destinies, there are, still, some, disposed to reason concerning the foreign policy of the country, on data drawn from the condition in which America so lately *was*, rather than from those that may be drawn from the condition in which America actually *is*.

A crisis has arrived, that renders the investigation of these truths more than usually proper; and, while I feel that neither my limits nor my leisure admits of justice being done to the subject, it is the object of the present article to present to the reader some observations on this interesting topic.

I shall begin, by remarking, that too many, (in regarding the present controversy with France,) appear to have lost sight altogether of the great object which the nation has in view. They seem to think that the preservation of peace is all that can be desired. To this end they direct their reasoning, their influence, and their hopes. Peace is not the object we seek. Peace we have; and in order to maintain it, no great ingenuity is necessary. To effect this abstract purpose, we have only to abandon all claims to our rights, all pretensions to character, and to lose sight entirely of one of the greatest objects for which this Union was formed, and for which we have become a nation; viz. the security of the citizen, when removed beyond the protection of his own municipal laws. The preservation of peace, in our present situation, is but a secondary or a collateral consideration. True humanity, like true policy, is just as much interested in our not mistaking the accessary for the principal, in this matter, as it would be in refusing the use of bullets in warfare, that we might go back to that condition of society, in which men are beaten to death with clubs.

The assertion of high and fair principles, and the maintenance of national character, have just the same connection with justice, and by necessary connection with real humanity, as an advanced state of the arts has on the conduct of wars, which, it is scarcely necessary to say, become less brutal and vindictive, as they become farther removed from the struggles of sheer brute force. If we fight, it is that the sacred claims of truth may be supported, and in defence

of principles that are necessary, not only to the character and dignity, but, in the end, to the independence of the nation.

It is admitted, on all hands, that America and France stand towards each other, at this moment, in warlike attitudes. Whatever may be the result of the present unfortunate difficulties, it is peculiarly proper, therefore, that we should take a cool, and an accurate inventory of our means to sustain a contest, and that these means shall be compared with those likely to be at the disposal of the other party. Dispensing with any more preliminary remarks, I shall come, at once, to this duty.

Whether a war with France should be purely maritime, or not, it is certain that our principal means of offence, as well as of defence, are to be looked for in a navy. If we are to be invaded, this arm of the national defence will prove the most efficient in anticipating and preventing descents on the coast, as well as in completing the triumph of a victory on land, by intercepting retreat. Serious invasion, in fact, would be impracticable, in the face of a strong marine; for reinforcements and supplies would be unattainable; and harassing expeditions, like those attempted by the British, in the war of 1812, would become too hazardous to be risked. On the other hand, if we are to strike at the French colonies, the wisest and most practicable means of bringing the war to a just and speedy close, the policy can only be effected, under the protection of powerful and victorious fleets. To the Navy, then, I shall chiefly direct the inquiry of the present article, deferring the interests connected with the other service, to some future day.

I will here remark, that the public mind appears to have taken a wrong bias, on the subject of the method of carrying on a French war. Most of our reasoning is applied to the means of defence, when our energies should be directed to the means of attack. Though our war would be purely defensive in principle, to be successful, it must become aggressive in fact. A war that should be purely defensive, would confine its efficiency solely to commercial losses; a mode of injuring an enemy, that all experience has shown to be unequal to the

attainment of its end. Neither war, nor non-intercourse, would exclude the manufactures and products of France from our markets. They would be dearer, and their consumption would probably be diminished, though not to an extent seriously to injure our enemy, while the consumer, in both cases, would pay the difference. Expedients of this nature, are certain to open new sources of trade and profit, and not unfrequently, at the expense of the morals and laws of the nation which most relies on their efficacy. *A war with France, to be effective, must be conducted vigorously on the offensive.* Our ships must be abroad in fleets; the American waters must lie at our mercy, nor must the enemy be permitted to find security, even in the European seas. Without aiming at such high means, the struggle, it is true, may serve as a protest in favor of great principles, and it may (to a certain extent) preserve the character and tone of the people; but it will do no justice to the resources, to the enterprise, and to the policy of the nation. That I am not exceeding the bounds of discretion, in making these assertions, it shall be my endeavor to demonstrate.

In the number of her vessels, in preparation, in naval arsenals, and in naval stores, the marine of France is greatly in advance of our own. But all these are the results of artificial and forced means, rather than of causes which may be called natural. The true maritime resources of this country exceed those of France in a much greater degree than that in which her present preparations are in advance of ours. France, with a view to compete with England and Russia for the mastery of the Mediterranean, the great object of her maritime policy, has been forcing her navy, which exists rather in despite of the national character, and a limited commercial navigation, than as a consequence of both, or of either. On the other hand, the marine of this country, as it is now organized, has been forced upon us by our wants, and in direct opposition to the leading prejudice in favor of an exaggerated and misdirected spirit of saving. Twenty years since, a fleet of twenty ships of the line was looked forward to, as to the most remote probability; as an event of another century; and yet we have nearly attained that

point, in a time of general peace, and in the face of contending factions, who have constantly made a stalking-horse of economy, to obtain power. The navy of America is the offspring of her commercial necessities; while that of France is the result of a policy that has incessantly to struggle against natural disadvantages.

It follows from these truths, that France, as a naval power, appears stronger on paper than she will be found to be in fact; and that America, with her energies properly directed, would be found to be stronger in fact, than she appears to be on paper. There is also another reason why France, as a naval power, is not nearly as strong as she is made to appear by her returns. The cruising vessels do not much exceed half of her list; a large proportion of her vessels being transports, hospital-ships, store-ships, and despatch boats, none of which would be available as against us, unless in the event of invasion; a course that could not be taken, were the resources of this country rightly developed. On the other hand, no marine in the world, has, relatively, so few useless vessels as our own. We have ships that require repairs, it is true, but once in order, there is scarcely a vessel on the list, not one of any force, that could not be made really effective.

All that I claim, as premises for my argument, are the facts, that this nation is skilful and rapid in the equipment of vessels; that it has, in abundance, the *materiel* of naval warfare; that its mariners are as good and as brave as those of any other nation, and that the *morale* and discipline of its marine are as high. I ask no more; I presume that no one will be disposed to deny me these. I shall affirm that, man for man, ship for ship, and gun for gun, the French are no better than ourselves, and I trust no American will wish me to say less in our own behalf.

An offensive and defensive maritime war can be carried on only in fleets of heavy vessels. Light cruisers may annoy, and they may invigorate by their successes, but they can scarcely produce peace. Desultory warfare on the ocean, like skirmishes on the land, does not lead to great results. Economy itself, therefore, points to heavy investments at the

commencement, and to large exhibitions of force, that a waste of time and of efforts may be avoided. One victory, like that of Trafalgar, would be worth a hundred successful combats in frigates. It would cost less in blood and treasure, and would directly tend to peace, while defeats in detail would rather excite our enemy to new efforts, and produce little more than fresh exertions. I know that the public mind is not yet prepared for a great demonstration of naval force; that opinion has not kept pace with facts; and that they who are most disposed to meet the struggle, calculate more largely on the effects of commercial distress in France, than on our own means to coerce justice. It is my aim to prove their error.

In order to make out my case, let us investigate facts. The annual revenue of France may be put, in round numbers, at $200,000,000. This is an enormous sum, and we are too apt to ascribe undue power to the nation which can pay it. But it should be remembered, this is what France is paying to-day, in a time of peace, though with an army on a war establishment. In this expenditure, however, is included all the charges of justice, a portion of the expenses of the roads, the civil cost of government, and many other heads of expenditures, that, with us, are purely local. Perhaps $20,000,000 may about meet the proportion of similar items with us, including the cost of the army and navy, on the present peace establishments. Counting head for head, the people of this country, to say the least, are quite as able to pay an equal amount of taxes, as the people of France. If there be rather more wealth among the rich in France, there is vastly more poverty among the poor. As a whole, therefore, after allowing for the difference in numbers, we are, in fact, the richer nation of the two.

The known rate of increase of the population, will give America, to-day, 15,000,000 of souls; while that of France is about 32,500,000; for the facility of calculation, however, I will put the latter at 33,000,000. If 15,000,000 of souls pay $20,000,000, 33,000,000 ought to pay but $44,000,000; whereas France, in fact, pays already four times and a half that sum. Now, making all plausible deductions from this calculation, and allowing for a greater military and naval

equipment on the part of France,—which military and naval preparations, however, are necessary for objects unconnected with us, and may therefore fairly be set down in the general account against her,—we arrive at positive proofs that, comparatively, we are in a much better condition to bear the pecuniary burdens of a war, than the power with which we may be called upon to contend.

But money is not the only essential of war. Knowledge of the arts, organization, and *materiel*, are also required. Grape-shot, in some situations, are better than dollars. A knowledge of all the arts necessary to force naval armaments, will not be denied us. Our organization, though somewhat defective, is capable of an expansion and improvement to meet the emergency. There may be some delay in the necessary accumulation of *materiel*, especially ship-timber; but as durability must be sacrificed to necessity, I think this difficulty could be overcome, within the time I shall allow. The question of men shall be attended to in its place. With these preliminaries arranged, I shall proceed to show that a fleet of fifty sail of two-deckers, might be built, equipped, and sent to sea, within one year from this day, and there maintained, during a war of five years, on the present resources of this country.

The cost of such a ship as the Delaware, with her crew on board, may be set down at **$500,000.** If built in a southern port, it might a little exceed this sum; if in a northern, there would be more than a proportionate gain. The twelve vessels already launched, or nearly ready to be launched, with the materials collected for others, shall be counted, in a pecuniary sense, as ten sail completely equipped. This will leave forty sail to be paid for. As the cost of every thing would be enhanced by a forced armament, and it would be necessary to build a portion, at least, (say half,) of these ships by contract, twenty per cent. shall be added for the difference. Forty ships, at **$600,000**, would make a total of **$24,000,000.** This expenditure could be easily met by the Treasury, during the current year.

A ship of the size of the Delaware might, on emergency, and with great efforts, be constructed in ninety days; but twice that period shall be allowed. This would, of course,

render it necessary to put up twenty ships at a time. There probably are, in the yards, ten ship-houses, of sufficient size to take in two-deckers, which would cause a saving of at least a month in a ship; especially in the northern ports. It might be necessary to use a good deal of white-oak in the frames of these vessels, but as economy of time, and not of money, would be the object, as just intimated, the loss would be in durability. It may even be questioned, *cæteris paribus*, if, on account of the difference in weight, a white-oak ship will not sail faster than a live-oak ship. It is not easy to see why this must not be the case, in moderate weather.

We next come to the important point of the crews. My plan would reject the use of frigates and sloops, beyond a very limited number. England (our great example, in too many things) has led us into an error, on this point. It is indispensably necessary to Great Britain, to keep up her communications with her numerous dependencies, by light armed cruisers. They are also eminently useful in her narrow seas, and in protecting her trade, by means of convoys. America is differently situated. We have no narrow seas; no colonies; nor could the system of convoys be established among us. The navigation we may possess in time of war must depend chiefly on its heels or its armaments. As a protection against privateers, the latter would be found, half the time, sufficient. All the government can do, will be to keep the coast clear, for entrances and exits, and, occasionally, to sweep particular seas. I repeat, we have no periodical colonial trade, that will admit of convoys. Neither are convoys suited to the character of this people. We might possibly send cotton-loaded ships, in autumn and winter, in fleets; but our treaties forbidding monopolies in this matter, like those which England enjoys in her colonial intercourse, neutrals would get all that portion of the carrying that our owners were not disposed to risk. This is almost the only interest that would be seriously injured by a French war. Cotton itself, after a short depression, would, I think, command higher prices, even in the country, so long as there should continue a safe outlet; for the domestic manufactories would create a lively competition for the raw material, and

enterprise, being directed to other objects, would impede the progressive opening of new cotton fields.

I shall take the present number of frigates and sloops, as all that will be needed. Our force, to be efficient, I repeat, (for on this truth rests all the validity of my argument,) must be exhibited in masses, and not frittered away in single ships. The former system made Napoleon a conqueror. The latter would have left him merely a marauder.

Fifteen frigates and twenty sloops shall be allowed. The crew of a heavy two-decker may be estimated at 900 souls; but to meet contingencies, it shall here be set down at 1000. For the same reason, the crews of the frigates shall be raised to 500, and those of the sloops to 250, all told. The supernumeraries would answer to do the service of the yards, and the usual port duty. These estimates will give us 50,000 souls for the line-of-battle ships; 7,500 for the frigates; and 5,000 for the sloops; making a total of 62,500 men. From this calculation, large as it certainly is, shall be excluded, entirely, the quarter-deck officers.

Taking each line-of-battle ship at 90 guns, each frigate at 54, and each sloop at 22, we get a total of 5,750 guns, which, at a marine a gun, makes a deduction from the remainder of the crews, of an equal number of men, leaving 56,750 still to be provided. The marines are deducted, because they are simply soldiers; might, at need, be drafted from the line of the army, and could be raised without difficulty, at any time.

We have now to recruit 56,750 petty officers, seamen, ordinaries, landsmen, and boys. Large ships notoriously requiring a smaller proportion of able seamen than frigates and sloops, 10,000 landsmen would not be a large estimate for the vessels named. The common American might safely be trusted at a gun tackle, or a brace, or a tack, or a fall, in opposition to the common French marine conscript. Were we to increase this amount to 20,000, the advantage would still be on our side, as must be apparent to all who are acquainted with the habits and physical forces of the laborers of the two countries. In general mental resources, and in aptitude to learn, there is no comparison between them. Al-

lowing a further addition of 5,000 boys, or of lads between twelve and eighteen, we have still to raise 41,750 petty officers, seamen, and ordinaries.

Although, in time of peace, *good* petty officers are difficult to be had, yet, in a war in which *no commissions should be issued to privateers*, it is believed they could be raised in any desirable numbers. The high pay, the advantage of prize money, want of employment in the commercial marine, and, it is trusted, a love of country, would lead thousands of active young men, mates of ships, &c., into the service, as quarter-masters, quarter-gunners, captains of tops, &c. &c. Ordinary seamen, in similar circumstances, would abound. If we allow for 3,000 petty officers, we shall certainly not be accused of a want of liberality. This number would not, probably, be employed afloat, but including supernumeraries, I think something near it would be required. If the remainder of the crews be equally divided between the seamen and the ordinaries, it will leave rather less than 20,000 men of each class, to complete the equipments. The country has, in round numbers, 100,000 mariners. Allowing that one half of these are thrown out of employment by a war, can it be thought that 50,000 mariners will not supply 3,000 petty officers, and 20,000 seamen, and such seamen, too, as are rated after the petty officers of a man-of-war?

Seamen, like fluids, are certain to find their level. Where there is good pay, good food, and good treatment, they will most abound. The packet service, between New-York and Europe, is perhaps the hardest duty in which a mariner can be employed. The pay is not very high, and yet they are always found.

No service pays equally well with our own; for no nation can so well afford to pay. Neither does any other service give a better ration; England excepted, perhaps no nation as good. A French admiral once inquired of the writer, how much we paid our seamen. On hearing the amount, he exclaimed, "It is not possible you can ever have a large marine; no nation could support the expense!" "How much, Monsieur, do you give your king?" "Eight millions of dollars, annually," observed Gen. La Fayette, who was present.

"Well, we pay the President $25,000; we will meet the difference in the cost of seamen, by the difference between these two items, alone, to say nothing of the other results of a general system of economy, which, perhaps, is carried out to a fault."

If the government will give *all* the prize money, in every case, to the officers and crews, instead of deducting one half for the pensions, as is now done, one great difficulty in obtaining men, will at once be removed. Nations should never speculate on their captures, but wisely use them as incentives to induce others to effect their great political ends. A deduction of ten per cent. might be made in behalf of the Pension Fund; but the balance should, without reserve, be given to the captors. By adopting this course, and by refusing to commission privateers, more than half of the mariners of the country would always be at its disposal, in the event of a serious maritime war.

I hold it to be unnecessary to show, that the population of the country is equal to bearing a drain of a hundred thousand men, for naval and military purposes, since the returns of the war of 1812, show a larger proportion (militia exclusive) under arms, in the years 1814 and 1815. I have far greater doubts of being able properly to officer the force named, than of the nation's being able to man it. The list of captains would require to be raised to about a hundred; that of the master commandants is now quite as large as would be needed, while that of the lieutenants ought not to be much less than six hundred. The service, as now organized, would readily furnish the necessary Flag Officers, and captains; but some doubts may be justly entertained on the subject of lieutenants. Ships may be handled, however, and well handled, too, with fewer officers than we are accustomed to attach to them; and a year or two of active warfare would do all that is required, to fit the elder midshipmen for promotion. Lawrence had a watch in the second year of his service; and Decatur wore a broad pennant within ten years from the day he was first afloat. I shall be asked, admitting that the country can build and equip the force named, in the time stated, in what manner are the annual burdens to be

met, and to what object are the services of so large a fleet to be directed?

There is little question, but we should be compelled to resort to loans, in carrying on a vigorous warfare; nor is there any doubt as to the ability of the nation to borrow, at reasonable rates of interest, any sums that are likely to be required. Direct taxation, the sales of public lands, and the custom houses, protected in their receipts by fleets able to keep the ports open, and the American seas clear of enemies, (a few straggling cruisers excepted,) would yield a sum much nearer to the whole amount of the expenditures of the country, than may at first be imagined.

The mean of the population of America, during the war of 1812, was about 8,000,000, or rather more than half of what would be the mean of the population, during a war that should commence on the 1st January, 1836, and terminate on the 1st January, 1840. No one will deny that the wealth of this country has increased, during the last twenty years, in a ratio greatly exceeding that of the population. I shall assume, however, that man for man, we are only as rich to-day, as we were in 1812.

As there was no recourse to taxation, in the first year of the last war, that year shall be omitted in the estimates. The last year, however, was a year of peace. My estimates shall be taken from the years '13, '14, and '15. I will therefore double the receipts of the custom houses, in 1814, in order to obtain what would have been the probable receipts of 1815, had not peace been made, and shall take the receipts of direct taxation, for the three years of '12, '14, and '15, as the latter year gave, probably, neither more nor less of this species of revenue, on account of the termination of the war. Indeed, the receipts of 1816, from this source of revenue, were larger than those of either of the former years.

The custom house receipts (war duties) of the years 1813, and of that of 1814, doubled, amounted to $25,223,167. This, it will be remembered, was while the coast was swarming with enemy's cruisers, and, virtually, without any neutral trade. The receipts from direct taxation and excise, in 1813, 1814, and 1815, amounted to $14,228,971; total, from both

sources of the revenue, $39,452,138; or a yearly average of $13,150,712. This latter sum, doubled, would give us the revenue to be derived from twice the population, supposing us to be placed under precisely similar circumstances. The amount would be $26,301,424, per annum.

But the circumstances, even in a French war, would not be at all similar to those of the last war. Neutral rights would be respected; our fleets, sweeping the coast, would put blockades out of the question; and the consumption of the country is rather quadrupled than doubled. A French war would not essentially diminish the receipts of the custom houses. The principal commercial loss would be in the carrying trade, after allowing for the *coups de main* of the enemy's privateers.

The sum of $26,000,000, would leave a clear revenue of more than $20,000,000, to be applied to military objects. This country pays no subsidies, supports no sinecurists, lavishes nothing on useless luxury. After a small sum for civil purposes is supplied, every dollar that is raised can be turned against her enemies! There is scarcely a doubt, that, by internal taxation and war duties, the current revenue to be applied to military and naval objects, might readily be raised to more than $40,000,000.

I shall next make some probable estimates of the cost of our fleet. The pay of the petty officers would amount to $648,000 per annum. That of 18,875 seamen, to $2,718,000. That of the same number of ordinaries, to $2,265,000. That of the landsmen, to $960,000. That of the marines, to about $500,000, officers included; and that of the boys, to $300,000. Total, $7,391,000. This sum shall be raised to $9,000,000, to meet the pay and allowances of the officers. The rations of 62,500 men, at war prices, and with war contingencies, or at twenty cents a ration, would cost $4,562,500 per annum. This is probably a high calculation; but I am not making estimates for an appropriation, but to convince the reader of the power of the country, and I wish to defeat cavilling, by the liberality of all my allowances. The pay and subsistence, then, of the navy, would amount to $13,562,000, or, reducing it to round numbers, to $14,000,000.

An allowance must now be made for naval stores, repairs, and reconstructions, under the casualties of war. There must, of necessity, be a good deal of vagueness in forming an opinion as to the latter contingencies; but, keeping in view a studied liberality, I hope to anticipate objections. Admitting that the cost of the whole marine would amount to $30,000,000, twenty-five per cent. per annum would, I trust, cover the cost of stores, repairs, and reconstructions. Add, then, these $7,500,000 to the $14,000,000, and a total of $21,500,000 is obtained. If we say of $22,000,000, we shall not surpass the net revenue, after deducting all civil expenses that would accrue, on premises *taken from the facts of the last war*, disastrous and improvident as that war is known to have been.

My data for the expenses of the army, are not so close, or exact. I am assured, however, that all charges included, the army now costs annually about $333 per man. This, it will be remembered, is with skeleton regiments, or with an undue proportion of officers, and a staff suitable for 20,000 men. But, taking this rule for our guide, an army of 30,000 men, quite enough, certainly, for a struggle with France with the coast covered by fifty sail of the line, would cost about $10,000,000 per annum, exclusively of the ammunition expended in battle, and similar extra charges. This sum, if necessary, might be raised by loans; but the necessity could only come from a culpable neglect to impose duties at the commencement of the contest.

If a debt of $50,000,000 should be contracted, after calculating all the extra charges that would follow a war, in the shape of half-pay and pensions, and the increased establishments of the country, it could, and probably would be paid off in the first five years of peace. A debt of $50,000,000 would be in the proportion of three dollars twelve and a half cents a head, for a population of 16,000,000. The debt funded in 1790, was at the rate of more than eighteen dollars per head. That of 1816, was at the rate of fifteen dollars per head. The same proportion as the latter sum bore to the population, in 1816, would enable us to clear a debt of $240,000,000, and, if the additional wealth of the nation be

computed, probably one of $500,000,000, in the first fifteen years of peace.

To prove that these estimates are reasonable, I shall refer to farther facts. In 1802, Great Britain, with a population in the British Islands, about equal to what our own is to-day, employed, in her fleets and armies, 326,613 men; the rates of pay in her army and navy being about half what they are in our own. This country had more than 50,000 men actually in her army and navy, at the peace of 1815. I say the rate of pay being about half as high as our own, for it requires no reasoning to show, that men will most freely serve, where they are the best remunerated.

I pretend not to anticipate the result of the French question. My object is to show the power of America, not with any view to kindle a spirit of pride, but simply to satisfy opinion; or, I may be permitted to add, to draw it nearer to the facts of our situation, than it has been accustomed to stand. If a war become necessary. we should all wish to see that war conducted on a scale commensurate with the great resources of the country, on a scale suited to the dignity and objects of such a strife, and on a scale that may lead to some of those lasting and important results which should always be kept in view, in making "the last appeal of nations."

At another time, I shall endeavor to consider the manner in which the proposed force might advantageously be employed in a war with France. Should it be necessary, I shall endeavor to defend the positions I have taken, by further facts and more elaborate demonstrations, which a want of leisure compels me to omit in this hurried article. In particular, do I propose to lay before the public a plan for manning the navy, on which much reflection has been bestowed, and which I most firmly believe to be, not only practicable, but every way expedient. One other statement, only, remains to be mentioned here. In a fleet of fifty ships, ten would probably be always in dock, or undergoing repairs, on an average, during a service of four years. This would diminish all my current estimates of money and men, from twelve to twenty per cent. J. F. C.

A PILOT'S STORY OF A SHIPWRECK.

By the author of "A Year in Spain."

WE have an idea, in America, that our own coast is a very boisterous one; but in this respect the coasts of the United Kingdom far exceed ours, being not only exposed to severer and more frequent gales, but fraught, moreover, with dangers from which we are almost entirely exempt, growing out of the existence of rocks and quicksands, sown in every direction, in the path of the mariner; the disadvantage of being surrounded by land in approaching a harbor, instead of having it only on one side, and the superadded difficulties of swift and high tides, together with the perpetual thickness and frequent mists, resulting from the obscurity of the atmosphere. Under these circumstances, it is not extraordinary that wrecks should be frequent, and attended, in many instances, with the destruction of the crews. Every British pilot whom you meet with, can relate disasters of this sort by the hour, such as he has either beheld, himself, or in the horrors of which he may personally have partaken.

Lying one night at single anchor, in Margate, it was my fortune to be entertained by one of these worthies, who related to me a whole bookful of the dolorous chances of his profession, among which was one story of a wreck of recent occurrence, which, on that account, was the more interesting, as entering into the possibilities of what might prove our own case, before another was past. He had brought a Quebec ship to, off Margate, where we were then anchored, about two months previous. She had made a long voyage, and was out of provisions. But I may as well let the pilot speak for himself. "We sent ashore for some grub, and they brought us off a fore quarter of beef. A whip was overhauled down for it, and the bloody boatmen, instead of slinging it by the leg, made it fast to two of the ribs. Away the sailors ran it up, for it was just the thing for them, and they were delighted in proportion to their hunger; but before we could get it on board, the ribs tore off, and the rest went over-

board. The captain was a regular grum one. Says he to me, for I was watching how they carried sail, 'Will it sink, pilot?' I looked black as a thunder squall at him—'Will the deep sea lead sink, sir?'

"Soon after this, it came on to blow great guns. We started our small bower, and let go the best bower. She fetched up with both anchors ahead. It blew harder; our best bower parted, the small chain held on, but we dragged it right on end, faster than I had seen her go, with all sail set. Presently she dragged on to a bank, shoaled her water, and fetched up short with a surge that made all crack again. The crew were knocked down fore and aft, and the water came over the bows in a combing sea, as she shot ahead. We kept on dragging and fetching up, for another half hour. Every time she surged, it jerked my heart into my mouth. At last the cable parted, though it was a good one, and we drove broadside to the wind. 'What's to be done, now?' said the poor devil of a captain, holding on to the companion way. 'Bear a hand, and unshackle your cable! haul aft the mizen-staysail sheet! hoist the fore-topmast staysail! get the close-reefed topsails and foresail on her!'

"I thought that it was not all up with us, yet. She sprung her luff, we were heading a little off the French shore, plenty of room under our lee, and had a good ways to drift, yet. The very first gust, though, took all our old sails out of the bolt-rope, like so much rotten paper, and away they flew, in ribbons. We had nothing but the mizen-staysail to keep her to the wind, and we managed to show the head of the jib, occasionally, so as to wear, and keep her head off the lee shore, as the wind veered and hauled. The clouds flew low the next morning, and it was very thick. We knew we must be near the land, and that nothing could keep us clear of it. About nine o'clock, we could see the loom of it under our lee, and presently the breakers dashing against the coast. We put the helm up, and stood for the place that looked smoothest, so that she might run well up. The very first plunge knocked the bottom out of the rotten old rat-trap; part of it floated up alongside of us, and the cargo of timber began to unload itself. It was just north of Calais where we

struck. The bloody French thieves came down to look at us. They were very busy picking up the nice things that floated ashore; but blast the one offered to help us. We contrived to get the boat out, and under our lee. Nine of the crew got into her. The rest of us determined to take our chance on board. We all watched the boat, as she shot away. They kept her stern to the swell; but when she got into the breakers, a combing sea took her under the counter, and turned her over, end for end. As far as we could discern, not one reached the land.

"We stood looking with anxiety; my blood ran cold; I wished them to be saved, yet, had they got on shore, I should have wished myself with them; there was a satisfaction in knowing that I had taken the best chance; they had played out their game, but we had yet a chance of winning. Soon after this, one of the crew said he meant to try it; he was a fine, tall young fellow, a river lad, who had served his time on the Thames. He said he could swim ashore. Says I to him, 'You are right, my lad, if you think you can reach.' He stripped, and let himself down into the water. When he came near the surf, he swam head to sea, until the three heavy seas had broke, then tacked about, and struck out. The first surf turned him heels up, and when we saw him again, he was floating like a corpse. It was only a moment; he came to, as the sea left him; shook himself, struck out, and we could see the Frenchmen lift him up, and carry him away.

"The tide was now up, and the sea began to break over us. We had nothing to do but to get into the rigging. The masts were all adrift, and threatening to fall. The captain alone remained on deck. Some deals had fetched away, and jammed him to leeward. He cried to me to help him; but it was as much as I could do, to take care of myself. It was soon over with him; a sea carried him along the gangway; the deals had bruised him; he had, besides, a faint heart; his voice was soon choked. We had been some time without food; the occasional rain squalls kept us from being thirsty, but we were as hungry as hawks. The beef bones were hanging to the mainstay. One of the sailors got to

them, and brought them into the maintop, and we ate the meat raw. It was the sweetest meal I ever made. The ship had drove up at high water; when the ebb left her, she lay high and dry, and we walked ashore, without wetting our shoes. We got dry clothes, some hot soup, and lots of brandy. To tell the truth and shame the devil, when we were once on shore, the Frenchmen behaved well enough to us."

SARDIS, IN 1830.

By a Lieutenant in the Navy.

THE feeling of blended awe, melancholy, and curiosity, with which we regard the vestiges of a nation's departed greatness, is a holy one; holy in its sympathies, and holy in its influences. It subdues the affections, awakens the soul to contemplation and reflection, and creates that disposition,

> "By which the sense is made
> Subservient still to moral purposes,
> Auxiliar to divine."

The scene of ruins addresses itself to the heart, and is full of meaning, and instruction. As we tread upon the "fallen pride of princes," and the "broken strength of kings," we have only to look inward for a revelation of that common humanity, by which we are mingled with the very dust under our feet, to bow down our spirits in a lowly and tender sympathy. The impression of solemnity is particularly powerful, on a mind fraught with the associations that belong to the place. For they constitute that knowledge, by which "the spiritual presences of absent things" are convoked, to heighten and regulate the fancy, and give to its musings the form and feature of reality.

But in wandering over ruins, that have been sanctified by the presence of prophecy, and have become the record of a miracle, a still more hallowed sentiment waits upon our

footsteps. For we may read in the tottering pillars, in the crumbling walls, and mouldering arches, lessons, not only of the weakness of human vanity, but of the triumphs of divine hope. If the eye of faith is undimmed, we may behold the "evidences of things unseen," and study our eternal, as well as our mortal destinies. Such is the allegorical and ambiguous character of prophecy, in some instances, that we are left to conjecture its meaning, until time, which reveals all things, shall make its light clear and bright unto us, as the light of the religion by which we now walk. But in the case of the primitive churches of Asia, its word is direct and unequivocal; and the truth of its fulfilment requires no other evidence than that of the sight.

It was about six o'clock of a gay spring morning, when the rapid advance of day was lighting up the hill tops, and dispersing the shadows in the valleys, that we crossed the river Pactolus—which no longer runs over golden sands—and found ourselves among the ruins of the former capital of the Lydian empire. They consist of the Acropolis, the Temple of Cybele, a Greek church, the house of Crœsus, and the Amphitheatre. These do not comprise all the ruins, which spread over and sterilize a surface of many square miles, but those only which antiquarians pretend to trace; and even in the three latter, it requires one to be an enthusiast, to discover any remnant of the former importance ascribed to them.

The Acropolis covers the summit of a precipitous hill, about 1500 feet in height, accessible only in one direction. The path, though steep and difficult, is safe, until it approaches near the summit, where it becomes narrow and dangerous. On the one side, the earth rises as a wall, and seems ready to crowd the traveller off the little pathway, into a deep ravine, which, on the other, invites him to jump into eternity. The ground, however, was dry, so that we were in no danger of slipping, and headed by a worthy leader, who "had a heart to love" the humblest fragment of antiquity, "and in that heart courage to make his love known," we ascended to the very pinnacle of the hill.

There is one spot, where it terminates in a sharp ridge,

that almost leans over a perpendicular wall, and looks from a height of giddy insecurity, upon a plain of the richest luxuriance, and calmest repose. It was some moments before we overcame the dizzy sensation, occasioned by a first glance. The eye was relieved by no resting-places in its descent, neither did it glide gradually down a sloping and spreading base, but fell at once to the depth of 1500 feet, while the side of the hill we rested upon, receded a little from the perpendicular, so that it was nearly lost to the sight. It is said to have been this part of the citadel that Crœsus neglected to guard, when the bands of Cyrus, conducted by a Persian slave, were introduced into the strongholds of the city.

The only remains of the Acropolis are dilapidated walls, the materials of which consist chiefly of columns, of different sizes and models, ornamented capitals, marble slabs with inscriptions, and similar fragments of temples, and other public edifices; from which we may conclude, that the date of its erection is comparatively modern. The extent of the ruins is astonishing, and corresponds with the idea history gives, of the grandeur and magnificence of this once famous city. We wandered over them for some time, until fatigue, and a constant repetition of the same scene, had blunted the edge of curiosity, and we seated ourselves upon the brow of the hill, to gaze upon the scenery around, every feature of which was marked by some peculiar interest.

Behind, the gloomy mountains of the Tmolus formed a barrier. Before us, from the foot of the precipice over whose giddy verge we were bending, spread a fertile plain—some twenty miles in length, parted in the centre by the river Hermus, of classic memory—once abounding in fertile fields, and prosperous villages, and the scene of a great battle between two of the most distinguished kings of ancient days, now only inhabited by the wild flower, that

"Wastes its sweetness on the desert air."

At our feet lay the ruins of Sardis, at one time the richest city of the world, connected with the names and recollections of Cyrus, Crœsus, Solon, Æsop, and the triumphs of the Roman empire; but, more than all, a melancholy monument

of the truth of divine revelation. Two of the most conspicuous objects in the view, are the Gygean lake, a reservoir for the irrigation of the plain, taking its name from its constructor, Gyges, and a tumulus, a mile in circumference, said to be the tomb of Ælyattes, the father of Crœsus. There are forty or fifty of these tumuli upon the plain, but this is the only one whose occupant is named by travellers.

The fatigue of going down was quite equal to that of climbing, and we were glad to find ourselves among the fallen pillars of the temple, and to take a classic draught from the pure waters of the Pactolus, upon whose banks it stood. Only two of the pillars, with part of the entablement, remain in their original position. They are very large, and must have belonged to a building of gigantic dimensions. They are of the Ionic order. The bases of several of the fallen pillars, in a line with those that are standing, are still discernible. As we were wandering in search of a fragment of marble, to preserve as a memento of our visit, we encountered a native, who was turning up, for cultivation, the very ground, upon which a part of the original temple must have been erected, apparently unconscious, that there had ever existed any thing more, than the ruins that interrupted his labor. The remains of the church, and the house of Crœsus, as they are called, are mere heaps of ruins, without any form, or regularity, to help to trace the extent or proportions of the original buildings.

Sardis was destroyed by an earthquake, early in the Christian era; and an attempt to restore it proved unsuccessful. The only dwellers upon its site, at present, are shepherds, whose rude huts, few in number, occupy the space that was once one of the most thickly inhabited portions of the globe. Two or three miles beyond, is a small village, where some Greeks still preserve the Christian worship. These may, perhaps, represent "the few names" which were excepted, in prophecy, from the curse which has overwhelmed this hapless city.

While on our journey in return, we were led, by the remark of a former traveller, to observe the disproportionate number of the habitations of the living, compared with the

burying-grounds met with, and were naturally led to reflect upon the rapid decrease in population, of this once thickly inhabited territory, and to contrast its former celebrity, and flourishing condition, with its present silent and solitary desertion. Yet, except where the marks of change are exhibited, in these tenanted cities of the dead, or in untenanted ruins, the face of nature, ever beautiful, continues still to bloom with unfaded lustre. Our road wound through valleys of exuberant fertility, and over hills of romantic beauty, where the eye never ceased to encounter those "old felicities" of nature, whose loveliness is constantly growing more and more dear to the heart, that looks upon them understandingly.

The way was solitary and melancholy, but melancholy only from association. Nothing could be more beautiful and exhilarating, than the new year, springing up beneath our feet, with all nature reanimated, and breathing forth the freshness of young life. But as we recalled the storied past, and the dark shadows of change that have rolled by, the blight that has fallen upon the land oppressed us; and while we meditated on its present destiny—groaning under the oppression of the "turbaned Turk," depopulated, and cursed with ignorance and superstition—we almost sickened at the feast of beauty, which nature spread for us, with the sword of a cruel fate suspended from above.

He who "communes with the forms of nature," must borrow the spirit of that communion from his own thoughts. For what, indeed, is the mere view of her rich and ever-varying presentations, compared with that deep contemplation which absorbs the soul, and makes every feature of the scene eloquent, and full of suggestion—while the mind, in return, invests the mountain, and the valley, and the gently-gliding waters, with the interest and life of its own associations, spreads itself, as it were, over the scene, and makes it wholly its own? To us, whose thoughts were retrospective, the prospect, though ever-changing, and ever-beautiful, was ever-sad; and the ruins, the cemeteries, the meagre villages, scattered at long intervals, the rude and barbarous Turcoman, with his sun-burnt and gloomy visage, his savage hut, and

scattered flock, and the awkward caravan, with its centipedal march, all seemed linked together in that chain of record, that told of the past desolation, and the present hopelessness of this unhappy region.

HISTORY OF NAVIGATION.

By E. C. Ward, Esq., Professor of Mathematics in the U. S. Navy.

AMONG the various branches of science, which, by the gradual development of human knowledge and ingenuity, have been brought to any degree of perfection, that of NAVIGATION is one of the most ancient.

The poets refer the origin of this art to Neptune, some to Bacchus, others to Hercules, and Jason, and others, again, to Janus, who is said to have built the first ship. Some contend, that the first hint was taken from the flight of the kite; and others derive it from accident.

The Scriptures would seem to attribute its introduction to God himself, in furnishing a first specimen of its uses, in the ark constructed by Noah, under his direction—while profane history ascribes it to Æginetes, to the Phœnicians, the Tyrians, and the ancient inhabitants of Britain.

The Phœnicians, especially those of their capital city, Tyre, are generally represented as the first navigators; being urged to seek a foreign commerce, by the narrowness and poverty of the slip of ground they occupied, along the coast, as well as by the possession of two or three good ports, and by their natural genius for traffick. Lebanon, and the other neighboring mountains, furnished them with excellent wood for ship-building, and in a short time they became masters of a numerous fleet. From constantly hazarding new navigations, and entering upon new trades, they soon arrived at an incredible degree of opulence; their country became very populous, so much so as to enable them, at an

early period, to send forth colonies to the surrounding coasts. A principal of these was Carthage, which, keeping up a Phœnician spirit of commerce, in time, not only equalled Tyre itself, but greatly surpassed it; sending its merchant fleets, not only throughout the Mediterranean, but even through Hercules' Pillars,—now the straits of Gibraltar,—along the western coasts of Europe and Africa, and even, as some authors would lead us to believe, to America itself.

Tyre, whose immense riches and power are represented in such lofty terms, both by sacred and profane authors, being destroyed by Alexander the Great, its navigation and commerce were transferred, by the conqueror, to Alexandria, a new city, admirably situated for those purposes, and proposed to be the capital of the EMPIRE of ASIA, the establishment of which Alexander then meditated. Thus arose the navigation of the Egyptians, afterwards so famed, under the patronage of the Ptolemies, that even Tyre and Carthage were almost forgotten.

Egypt being reduced to a Roman province, after the battle of Actium, its trade and navigation fell into the hands of Augustus. At this time, Alexandria was only inferior to Rome; and the magazines of the metropolis of the world were wholly supplied with merchandise from the capital of Egypt. But at length, Alexandria itself underwent, in a degree, the fate of Tyre and Carthage. Surprised by the Saracens, who, in spite of the Emperor Heraclius, overspread the northern coasts of Africa, her merchants were driven to foreign fields of enterprise, and she sank into comparative insignificance and obscurity. She has ever since been in a declining state, though even at the present day, in possession of a considerable part of the commerce of the Christian merchants trading to the Levant.

The nations of Roman Britain, and the tribes of Caledonia and Ireland, had inherited, from their earliest ancestors, many of the ruder arts of navigation. Their vessels were large open boats, framed of light timbers, ribbed with hurdles, and lined with hides. These were furnished with masts and sails, the latter being formed of hides, while the tackle was of thongs. The sails used even among the Veneti, so late

as the days of Cæsar, were also of hide. They were never furled, but only bound to the mast. But these slight sea-boats and their furniture, were soon changed by the provincials, for the more substantial vessels, and more artificial sails, of the Romans.

The fall of Rome and its empire drew along with it, not only the decline of learning and the polite arts, but that of navigation, also; the barbarians, into whose hands it fell, contenting themselves with the spoils of the industry of their predecessors. No sooner, however, were the more brave among those nations well settled in their new provinces—some in Gaul, as the Franks; others in Spain, as the Goths; and others in Italy, as the Lombards—than they began to learn the advantages of navigation and commerce, and the methods of excelling in them, from the people they had subdued; and this, with so much success, that in a little time, some of them became able to give new lessons, and set on foot new institutions for its advantage. It is thus that the invention and use of banks, book-keeping, exchanges, &c., is usually attributed to the Lombards.

It is not certain which of the European nations, after the settlement of their new masters, first betook themselves to navigation and commerce. Some think it was the French; though the Italians seem to have the best claim to it, and are generally considered as the restorers of these, as well as of the polite arts, which had been banished with them, from the time the empire was torn asunder. The people of Italy, particularly those of Venice and Genoa, have the glory of this restoration; and it is to the advantage of their situations for navigation and commerce, that they, in a great measure, owe this glory.

A great number of marshy islands, in the upper part of the Adriatic, separated from one another by narrow channels, only, but those well screened, and almost inaccessible, became, at an early period, the residence of a few fishermen, who supported themselves by a small trade in fish and salt, found in some of these islands. Thither the Veneti, a people inhabiting that part of Italy along the coasts of the Gulf, opposite, retired, when Alaric, king of the Goths, and afterwards

Attila, king of the Huns, ravaged Italy. Little imagining that this was to be their fixed residence, these new settlers did not think of composing any body politic; and each of the numerous islands of this Archipelago continued, a long time, under its separate masters, and each made a distinct commonwealth. When, however, unexpectedly, as it were, to themselves, their commerce had become considerable enough to give jealousy to their neighbors, they began to think of uniting in one body. This union, first begun in the sixth century, but not completed till the eighth, laid the sure foundation of the future grandeur of the State of Venice. From this time, her fleets of merchant vessels were sent to all parts of the Mediterranean; and particularly to Cairo, a new city, built by the Saracens, on the eastern bank of the Nile, where they secured the spices, and other choice produce of the Indies. Venice continued thus to flourish and increase, in her commerce, her navigation, and her conquests, till the league of Cambray, in 1508, when a number of jealous princes conspired to her ruin. This was the more easily effected, from the diminution of her East India commerce, of which the Portuguese had secured to themselves one part, and the French another. Genoa, which had given herself to navigation at the same time with Venice, and with equal success, was long a dangerous rival, disputing with her the empire of the sea, and sharing with her the trade of Egypt and other parts, both in the east and west.

Jealousy soon began to be excited between them; and the two republics coming to blows, there was almost a continual war, for three centuries, before the superiority of either was determined. Towards the end of the fourteenth century, the battle of Chioza ended the strife; the Genoese, who, till then, had usually the advantage, having lost all, the Venetians themselves, almost reduced to despair, at one happy blow, secured to themselves, beyond all expectation, the empire of the sea, and the dominion in commerce.

About the same time that navigation was revived, in the southern parts of Europe, a new society of merchants was formed in the north, which carried commerce to the greatest perfection of which it was capable, previous to the discovery

of the East and West Indies; and formed a new scheme of laws, for its better regulation. This society constitutes the famous "League of the Hanse Towns," commonly supposed to have begun about 1164.

In examining the reasons why commerce has passed, successively, from the Venetians, Genoese, and Hanse Towns, to the Portuguese and Spaniards, and from these, again, to the English and Dutch; it may be established as a maxim, that the relation or union between commerce and navigation is so intimate, that the fall of the one inevitably draws after it that of the other; and that they will always either flourish or decay together.

The art of navigation has been considerably improved, in modern times, both in regard to the form of the vessels, and the methods of working them. The use of rowers is now entirely superseded, by the improvements made in the formation of the sails, rigging, &c., by which ships not only sail much faster than formerly, but are managed with the greatest facility. It is also probable, that the ancients were neither so well skilled in finding the latitude, nor in steering their vessels, in places of difficult navigation, as the moderns. But the greatest advantage which the moderns have over the ancients, is in the Mariner's Compass, by which they can find their way with as great facility in the midst of an immeasurable ocean, as the ancients could have done, by creeping along the coast, and never venturing beyond the sight of land. Some, indeed, contend, that this is not a modern invention, but that the ancients were acquainted with it. They say, that it was impracticable for Solomon to have sent ships to Ophir, Tarshish, and Parvaim, without this useful instrument. They insist, that it was impossible for the ancients to have been acquainted with the attractive virtue of the magnet, and yet be ignorant of its polarity. Nay, they affirm, that this property of the magnet is plainly mentioned, in the book of Job, where the loadstone is mentioned by the name of *topaz*, or *the stone that turns itself.*

However this may be, it is certain that the Romans, who conquered Judea, were ignorant of the polarity of the needle; and it is very improbable, that such a useful invention, if once

it had been commonly known to any nation, would have been forgotten, or should have been entirely concealed from so shrewd a people as the Romans, and those so much interested in its discovery.

Among those who think that the mariner's compass is a modern invention, it has been much disputed who was the inventor. Some give the honor of it to Flavio Gioia, of Amalfi, in Campania, in the fourteenth century; while others say, that it came from the east, and was earlier known in Europe. But, at whatever time it was invented, it is certain, that the mariner's compass was not commonly used in navigation before 1410, at which time the science was considerably improved, under the auspices of Henry, duke of Visco, brother to the king of Portugal. In 1485, Roderic and Joseph, physicians to king John II. of Portugal, together with one Martin, of Bohemia, a native of the island of Fayal, and pupil of Regismontanus, calculated tables of the sun's declination, for the use of sailors, and recommended the Astrolabe, for taking observations at sea. Of the instructions of Martin, Christopher Columbus is said to have availed himself, and to have improved the Spaniards in the knowledge of navigation.

The discovery of the Variation of the Needle, is claimed by Columbus, and by Sebastian Cabot. Columbus certainly observed this, without having heard of it from any person, on the 14th Sept. 1492; and it is probable that Cabot might have observed it about the same time. There was no variation, at that time, at the Azores, where some geographers have thought proper to place the first meridian. The use of the Cross-staff now began to be introduced among sailors. This ancient instrument is described by John Werner, of Nuremberg, in his annotations on the first book of Ptolemy's Geography, printed in 1514, and recommends it for observing the distance between the moon and some star, in order to determine the longitude.

At this time, the art of navigation was very imperfect, on account of the inaccuracies of the Plane Chart, which was the only one then known, and which, by its erroneous principle, must have greatly misled the mariner, especially in

voyages far distant from the equator. Its precepts were probably at first only set down on the Sea Charts, as is the custom at this day: but at length there were two Spanish treatises published, in 1545; one by Peter de Medina, the other by Martin Cortes, which contained a complete system of the art, as far as it was then known. These seem to be the oldest writers who fully handled the art; for Medina, in his dedication to Philip, prince of Spain, laments that so many ships daily perished at sea, because there were neither teachers of the art, nor books by which it might be learned; and Cortes, in his dedication, boasts to the Emperor, that he was the first who had reduced navigation into a compendium, valuing himself much on what he had performed. Medina defended the plane chart; but was opposed by Cortes, who showed its errors, and endeavored to account for the variation of the compass, by supposing the needle to be influenced by a magnetic pole, (which he called the *point attractive*,) different from the pole of the world.

Medina's book was soon translated into Italian, French, and Flemish, and served for a long time as a guide to foreign navigators. Cortes, however, was the favorite author of the English, and was translated in 1561; while Medina's work was entirely neglected, though translated within a short time of the other. At that time, the system of navigation consisted of the following particulars: an account of the Ptolemaic hypothesis, and the circles of the sphere; of the rotundity of the earth; the latitudes and longitudes of places, climates, &c., and eclipses of the sun and moon; a calendar; the method of finding the prime, epact, moon's age, and the tides; a description of the compass; tables of the sun's declination, for four years, in order to find the latitude from the sun's meridian altitude; of the course of the sun and moon; of time and its divisions; the method of finding the hour of the day or night; and lastly, a description of the sea chart, on which, to discover the place of the ship, a small table was made use of, which showed, upon an alteration of one degree of the latitude, how many leagues were run in each rhomb, together with the departure from the meridian. Cortes gave a description of some instruments, such as one to find the place

and declination of the sun and moon; certain dials; the astrolabe and cross-staff; with a complex machine to show the hour and latitude at once.

About the same time, were made proposals for finding the longitude, by observations on the moon. In 1530, Gemma Frisius advised the keeping of the time by means of small clocks or watches, then, as he says, newly invented; he also contrived a new sort of cross-staff, and an instrument called the nautical quadrant.

In 1537, Peter Nunez, or Nonius, published a book in the Portuguese language, to explain a difficulty in navigation, proposed to him by the commander, Don Alphonzo de Suza. In this, he exposes the errors of the plane chart, and gives the solution of several curious astronomical problems; among which is that of determining the latitude from two observations of the sun's altitude, the intermediate azimuth being given. He observed, that though the rhombs are spiral lines, yet the direct course of a ship will always be in the arc of a great circle, whereby the angle with the meridians will continually change; all that the steersman can here do, for preserving the original rhomb, is to correct these deviations, as soon as they appear sensible. But thus the ship will, in reality, describe a course, without the rhomb line intended; and, therefore, his calculations for finding the latitude, where any rhomb line crosses the several meridians, will be, in some measure, erroneous. He also invented a method of dividing a quadrant, by means of concentric circles, which, after being much improved by Dr. Halley, is used at present, and is called a nonius.

In 1577, William Bowrie published a treatise, in which, by considering the irregularities of the moon's motion, he shows the errors in finding her age by the epact, and in determining the hour, from observing on what point of the compass the sun and moon appeared. He also advises, in sailing in high latitudes, to keep the reckoning by the globe, as there, the plane chart is most erroneous. He despairs of ever being able to find the longitude, unless the variation of the compass should be occasioned by some such attractive point as Cortes had imagined—which, however, he doubts—

but as he had shown how to find the variation, at all times, he advises to keep an account of the observations, as useful for finding the place of the ship. This advice was followed by Simon Stevin, in a treatise published at Leyden, in 1599; the substance of which was printed at London, the same year, by Edward Wright, with the title of "*the haven finding art.*"

In this ancient tract is described the method of ascertaining the rate of a ship's sailing, by the Log, which was so called, from the piece of wood, or log, that floats in the water, while the time is reckoned during which the line that is fastened to it is veering out. The author of this contrivance is not known; nor was it taken notice of, till 1607, in an East India voyage, published by Purchas; but from that time it became famous, and was mentioned by almost all writers on navigation, in every country. It still continues to be used, as at first, though many attempts have been made to improve it, and contrivances proposed, to supply its place; many of which have succeeded in smooth water, but have proved useless in a stormy sea.

(*To be continued.*)

CAIRO, JERUSALEM, AND DAMASCUS.

From a letter of the late Lieut. David R. Stewart, of the U. S. Navy.

U. S. SHIP DELAWARE,
Oct. 24, 1834.

* * * * * * Our summer's cruise, although, in some respects, not so pleasant as that of the last, has been infinitely more interesting, particularly as we have been led by it over a route entirely distinct from that of every day travel.

After touching at Marseilles, Toulon, Leghorn, and Naples, on our way from winter quarters, at Mahon, we passed through the straits of Messina, on the 2d of July, and on the

13th of the same month, were off the city of Alexandria. Our object in making a visit to Egypt, was, to obtain an interview with Mehemet Ali, certainly the most extraordinary man of his time. He being absent, however, at the time of our arrival, with his son, Ibrahim Pasha, in quelling an insurrection in Syria, and not being expected to return in less than ten days, Com. Patterson formed a party, of which I made one, to visit Grand Cairo, and the Pyramids.

We embarked on the canal, recently cut from Alexandria to the Nile, on the 16th, and the next morning found ourselves at Mahomadia, on that famed river—a distance of forty miles. This canal was dug in six weeks! Two hundred thousand men were employed in the work, of whom twenty thousand perished on its banks, from famine or sickness! The Nile was rising rapidly; but a fresh north wind took us up, against the current, in three days. The distance, in a direct line, is one hundred and thirty miles, but the windings of the stream make it two hundred and forty.

Mr. Gliddon, U. S. consul at Cairo, had been informed of our intended visit, and preparations, which both surprised and gratified us, had been made for our reception. We arrived late in the evening of the 19th, at Boulac, and disembarked early in the morning of the 20th. The procession, in this ceremony, formed in the following order: first, an officer of the Pasha's household, superbly dressed; twelve running footmen; a splendid European landau—a present to Mehemet Ali, from the emperor of Russia—drawn by four white horses, for Mrs. Patterson and her daughters; twelve mounted janissaries, in two single files; the dragoman and janissaries of the Consulate; Com. Patterson, supported by Lieut. Chauncey and myself, and about thirty of the officers of the Delaware and Shark, all superbly mounted on Arabians, from the stables of the Pasha.

On our way from Boulac to Cairo, a distance of one and a half miles, we saw the house in which the brave Kleber was assassinated, and the tree under which Mehemet Ali first spread his carpet, as a soldier of fortune.

Mr. Gliddon, being a young bachelor, gave up his house entirely to us. I was duly installed caterer—an appointment

of no inconsiderable responsibility, since our party, including servants, amounted to near fifty—and, after a bath and lunch, we mounted, for a visit to the " Tombs of the Caliphs."

These are situated on the south-east side of the city, in a spot entirely barren. They make a fine appearance, and are considered splendid models of Saracenic architecture. Amongst them is the tomb of Malik Abdhil, brother of the great Saladin ; both renowned, in the wars of the crusades, as flowers of eastern chivalry.

On the morning of the 22d, we went in the state already described—and which accompanied us in all our out-goings—to visit the Governor, passing, on our way, the defile in which the unfortunate Mamelouks were entrapped, and massacred. The Sultana had sent a message to the ladies of our party, requesting a visit to the Harem from them—thither, therefore, they accordingly proceeded, while we were received by the Governor, in great state, and smoked pipes and drank coffee with him. (By the by, both the coffee cups and the mouth-pieces of the pipes were set with diamonds, and other precious stones.) He speaks French—hoped the Commodore had been pleased with his reception, &c, &c, and requested him to let him know how he could serve him.

His palace is in the citadel. From it we went to the palace of Ibrahim Pasha, to wait for the ladies. A part of this had been elegantly fitted up for us, and from it we enjoyed a full view of the town and citadel, with Old Cairo and the Pyramids in the distance. Here we were again served with pipes and coffee, and with sherbet, from the Harem. We next proceeded to Old Cairo, in which there are some magnificent ruins ; and then beyond it, to another palace of the Pasha, to which are attached very extensive gardens, under the superintendence of an English horticulturist. Here, also, is an aqueduct, built by the famous Saladin, for the supply of the citadel, and the Nilometer. At this place we viewed the stud of Ibrahim Pasha, consisting of eight hundred Arabians, were home to lunch, and after a stroll through the bazaar, which is far less magnificent than that of Constantinople, concluded the day with dinner, at 8 o'clock.

The 23d, at daylight, found us all bustle in preparing for

a visit to the Pyramids, with the intention of being absent two days. By sunrise, Mr. Gliddon and myself had seen the party and luggage off, on camels, mules, dromedaries, horses, and donkeys, and soon made arrangements to follow, ourselves, on two fleet dromedaries. We overtook the last of the train at the ferry of Ghiza, and proceeded, with the whole party, over a level plain, in the direction of the Pyramid of Cheops.

Nothing can be more deceiving to the eye, than these stupendous monuments of human labor. I drew, in vain, at the sight of them, on my memory, for the immense dimensions given of them, by travellers. I could see nothing to fill up the picture. The fact is, there is no object near, with which to compare them. The closer I approached, the more was I disappointed, till, when within three hundred yards of the principal one, a sudden turn gave me a view of it at a different angle, and all its immensity burst at once upon me. Some of our party were already ascending it, and appeared like so many bees, climbing a hive.

The angle at which the Pyramids are erected, precludes their throwing a shade, after the sun has attained any considerable elevation; and, as the sun was getting high, it was my business, as caterer, to provide a sheltered place, in which to take breakfast. The Arabs were almost as numerous as the sands around us, and fifty of them soon cleared out, for this purpose, an ancient tomb, sufficiently large for our whole party. The only difficulty was the entrance, which was so low as to require us to go upon our hands and knees. After a repast here, we left the ladies to their repose, and proceeded to mount the principal Pyramid. Some of the stones of which this is composed, are thirty feet by twelve, in their dimensions, so that there is no trifling labor in the ascent, though all the young ladies of our party had been up, before breakfast. I provided myself with three men, stout fellows, one hold of each hand, and one behind me, with a boy, bearing a bottle of water, in attendance. In this manner I reached the summit, in about half an hour, pausing three times to take breath, and look around me. In the verdant and fruitful season of the year, that is, after the inundation has subsided,

the view from the top must be beautiful, indeed; but now, there was nothing to be seen, on every hand, but the blackened and parched earth.

The descent was much easier than I had expected. I felt so much fatigued, however, as to be glad to avail myself of a place of shade, and, on my carpet, to take a nap within the sepulchre of Cheops.

At 3, P. M. "all hands were called," and at 4, we started for the Pyramids of Sakhara, distant twenty miles, over "the Plain of the Mummies." We arrived at 9 o'clock, and found a large and elegant tent pitched, by order of the Governor, and a dinner in readiness, which we enjoyed heartily. In the morning, after seeing the Pyramids, five in number, and every thing worthy of attention, we proceeded two miles, to the river, where boats were in readiness to transport us to Tura, a favorite school of the Pasha, under the management of the Spanish General Leguerra. Here the cadets were put through their exercises, &c, &c, for our gratification, after which we embarked for Cairo, finishing the day with a dinner at 10 o'clock, P. M.

The 25th was devoted entirely to the Bazaars, and to visiting some Christian families, who had been to see us. The 26th and 27th we gave to the arsenals, cannon foundry, cotton mills, schools, &c, in operation under the Pasha; and on the 28th, after visiting Joseph's Well, four hundred feet deep—which distance you descend by a gallery—the Tombs of the Mamelouks, and the Mausoleum built by Mehemet Ali, for himself, we went to return thanks to the Governor, and take leave; Mrs. Patterson and her daughters being, in the meantime, the guests of the Sultana, in the Harem.

[A lively and graphic account of the visit to the Harem, here alluded to by Lieut. Stewart, from Miss Patterson to a female friend, made its way into print, some months since. It presents so distinct a picture of an incident rarely occurring, and without precedent in Egypt—the entertainment, in the Harem, by the Sultana, of a party of ladies from a Christian country—that we cannot deny ourselves the privilege of introducing it, in its connection with the letter we are publishing. Our readers will thank us for its insertion;

and the interest and pleasure, with which it has already been extensively perused, must plead our apology with the fair and accomplished writer, still in the Mediterranean.

After relating the reception of the party in Cairo, and referring to the incidents found in the preceding pages, the polished traveller says—

"We are the only Christians who have ever been admitted into the Harem of Egypt. We have been there twice; the first time, merely to call upon the Sultana, but the second, to spend the day. I must endeavor to describe this to you.

"At the outer gates of the palace, we were received by a dozen black eunuchs, who led us to the garden entrance. Here we found three girls, playing upon different Arab instruments, while two others were singing, and two dancing, magnificently dressed in crimson and blue cloth, embroidered in gold; the full pantaloons hanging over the foot, just allowing an embroidered slipper to be seen; a jacket tight to the shape, without sleeves, open a little upon the chest, where appeared a chemise of blue or white gauze, closely spangled; sleeves of the same, hanging large and full to the elbow, and down behind, in a dozen plaits. The sides and top of the head were ornamented with sprigs of diamonds, and a sash of gold tissue, with deep gold fringe, finished the dress.

"These pretty creatures preceded us to the palace, where we were met, like old friends, by the Sultana, her maids of honor, and attendants, to the number of at least a hundred. The great hall of state into which we were ushered, is immense in its dimensions, and lined and floored with white marble. In the centre is a basin, fifteen feet square, and a large fountain, from which the purest water was playing. The ceiling is richly painted and gilt; and one side of the hall lined with ottomans, embroidered in gold, with a beautiful Persian carpet, spread in front.

"The Sultana is about thirty-five years of age, with a fine face, though the eye is stern, and is dignified and affable in her manners. Her dress was a Chali, made in Turkish style, only more closed over the neck. On her head she wore a sort of scull-cap, formed entirely of diamonds. Around this

was twisted an embroidered kerchief, and on the left side, near the ear, was placed a sprig of flowers, made of enormous diamonds. Her ear-rings, a single pair, were shaped like a drop, as large as the end of my little finger, and on her hand was a most superb diamond ring.

"As soon as we were seated, pipes and coffee were served. Around us stood the hundred attendants, dressed in colored silks, and every one, even of the lowest rank, with head covered with diamonds. The pipe stems, and the sockets of the coffee cups, were studded with the same precious stones. Such a glitter I never before saw. An Armenian woman, who spoke Italian, was present, as interpretess. Our gloves and buckles, indeed, our whole dress, excited great admiration. I do not know that I was ever so pulled and hauled about, as on that day.

"We were taken over the whole palace, and it vied in elegance, throughout, with the great hall. At half past 12, we were led, by the Sultana, down to the reception room, to dinner. As we entered, girls, bearing silver basins, approached; others poured water, from silver pitchers, over our hands, while others, again, presented us with towels.

"On the centre of the Persian carpet stood a small table, about a foot square, covered with a cloth of gold tissue. On this was a circular glass waiter, about three feet in diameter. In the centre was a dish of roast mutton. The Sultana sat down, with my mother and self on either side of her; then my sisters, and a lady of the Court, formerly a slave of the Pasha, but now the wife of a colonel in his army. The interpretess stood and carved for us. The china was French, and handsome; the knives and forks silver. These the Sultana knew not how to use, and punched at the meat with them, in the most unmerciful manner.

"When we sat down, a napkin was placed on each of our laps; another, embroidered in gold, laid over the right shoulder; and a third, very fine, placed on the lap, to be used in wiping the mouth. Some of the slaves fanned us; some held the different dishes; others silver salvers, with knives; others, again, silver pitchers, and so on. What with the beautiful dresses, the glitter of gold and diamonds, the divan, the mar-

ble hall and fountain, it seemed as if the scenes of the Arabian Nights were realized before me. I wish you could have been there. Our only regret was, that this beautiful imagery could not be enjoyed by some of our friends.

"But it is said, there is no pleasure without its alloy. The dinner was almost too much for us—we counted thirty-nine different dishes, served at one time, and of each we were obliged to eat! And so strangely served, as they were! The first five dishes were of mutton, rice, &c; then a sweet dish; then fried fish, and fried lemons; then meat; then another sweet dish; next fried fish and nuts, and so on, till the thirty-ninth, which was stewed rice, and bonny-clabber. The glass salver was at length taken away, and a silver one replaced, with melons, peaches, grapes, and other fruit.

"When we rose from table, the girls with the basins knelt before us, our hands were washed as before, and pipes and coffee again given, with which to finish off.

"While we smoked, the Sultana retired for prayers, which she does five times a day. Then, could you have witnessed the scene, you would have thought us among a parcel of great children. Oh! how we were dragged about, patted and pulled, each woman declaring we belonged to her, and should not speak to the others.

"At 3 o'clock, we were sent for to depart, as the gentlemen were satiated with smoking, and could wait no longer. They had been with the Governor all this time. The Sultana held us tight, and said the Capidan Pasha had no business to send for us; and it was 4 o'clock, before we could get away.

"We made a great procession through the garden. First went the musical, dancing, and singing girls; then the Sultana and ourselves, with slaves, bearing fans of peacocks' feathers over our heads; and then the crowd of attendants. At the garden gate, sherbet was handed, when we took a kind farewell of our hospitable Sultana, were consigned to the care of the eunuchs, and at the carriage found the gentlemen, impatient to learn all we had seen and heard."]

We could not leave Cairo—continues Lieut. Stewart—without some slight return for the civilities we had received.

This was proposed to be given, in the form of a pic-nic, at the palace of "Shoubra," "*pleasant place*," eight miles below Boulac, on the Nile, offered to us for the purpose. Here, on the 29th, we received our kind friends; bade them farewell; dismissed our equipage; stept into our boats, and were off. The boats were not the same in which we came up the river, but those furnished us by the Pasha, and placed absolutely at our disposal. So much for *Turkish hospitality.*

Our passage down the Nile, owing to strong northerly winds, was tedious, and we had frequent opportunities of landing at the villages, and seeing the condition of the people; the first, more than half depopulated, and the last wretched in the extreme. With a standing army of 130,000 men, and a marine nearly equal to that of the United States, but every ship of which is in commission, Mehemet Ali wrings from the miserably reduced population a revenue of $30,000,000! His eye is on every man's hearth, and his hand in every man's pocket. He is the only domestic merchant throughout the vice-royalty. No man, under his dominion, can eat a plate of the rice he has raised, or weave a pound of the cotton he has planted; every thing must go to the depots of the Pasha, where it is received at his own valuation, and then sold at a price fixed by himself. Never before did there exist such a searching, such an all-pervading despotism!

On our arrival at Alexandria, we found a palace fitted up for us, in the vicinity of one of the enormous granaries of the city. Com. Patterson, and those who wished to remain on shore, staid here a few days, until the arrangements for a visit to his Highness were made. The 7th August was fixed for the interview; the Pasha intimating that he wished to see as many of the officers, as could conveniently attend. We were, accordingly, at the palace at 8, A. M., and were immediately admitted. We were received with much less state than at Cairo, but we saw MEHEMET ALI; he, who, on the banks of the Bosphorus, dictated a peace to the sovereign of a hundred thrones. He is small in stature, and agreeable in features, with an eye like a falcon. Interviews of the kind seldom amount to any thing more than a string of unmeaning compliments. He talked a good deal of himself, and of

what he had done, and intended to do for Egypt; promised to visit us on board the "Delaware;" inquired into our mode of cultivating coffee, &c, &c, and the audience broke up.

This man has made Egypt almost independent of Europe. He has built a navy, organized an army, established schools, arsenals, factories, introduced numerous steam engines, and improved the country wonderfully; but in accomplishing it, he has ground its population in the dust, and reduced it to the most abject condition. Before returning on board ship, we took a ride to ancient Alexandria, to examine its remains of antiquity, and gaze upon its beautiful and famed columns, Cleopatra's Needle, and the Pillar of Pompey.

On the 10th of August, we sailed from Alexandria, and arrived at Jaffa on the 13th. We were now within forty miles of Jerusalem—that city held equally holy, by Christians of every sect, as well as by Jew and Moslem. Every officer on board was of course anxious to visit it, and we were divided into two parties, the second to go after the first should have returned.

Commodore Patterson made one of the first, and invited me to accompany him. We started on the afternoon of the 15th, and after a ride of twelve miles, over an extensive plain, arrived at Ramah, to dine and sleep—not the Ramah, however, in which was heard "a voice of lamentation, and weeping, and great mourning; Rachel weeping for her children, and would not be comforted, because they were not," which was near Bethlehem—but the ancient Arimathea. We started next morning at daylight, and travelling slowly, over bad roads, arrived at Jerusalem in the evening. The Commodore, with his family, were hospitably received in the house of the Rev. Mr. Nicolayson, an English missionary, while the remainder of us went to a Greek convent. Our quarters in this were miserably dirty, and I soon employed some people to clean them out, much to the astonishment of the good Superior.

On the morning of the 16th, we visited the church of the Holy Sepulchre. Before you, on entering it, is the stone or slab on which, it is said, our Saviour was washed, when taken from the cross; on your right, the place of the Cruci-

fixion, on Mount Calvary; on your left, the Holy Sepulchre, all enclosed in a building in the body of the church. The church, its localities and relics, have, however, been so frequently described, that I must refer you to the writings of abler pens, for an account of them. What struck me most forcibly, at the time, was the small space into which the scenes of these great events are crowded, all within the body of the church. The localities, however, are believed to have been satisfactorily identified, and the buildings erected, as early as the fourth century, by the empress Helena, the mother of Constantine.

After dinner of the same day, we rode to the Mount of Olives. We went out by the gate St. Stephen, where is shown the tomb of the Innocents, and immediately descended into the Valley of Jehosaphat. At the head of the valley, and a little from the road, on the left, is the Garden of Gethsemane, the scene of our Saviour's agony and betrayal. There are several olive trees still standing here, said to be coeval with the Christian era. There is satisfactory proof, that they are more than eight hundred years old. From the Mount of Olives, there is a fine view of Jerusalem, on the north, and of Bethany, where the tomb of Lazarus is shown, on the south, with the river Jordan and the Dead Sea in the distance.

On re-entering the city, we were near getting into a scrape; by making a false turn, we unexpectedly found ourselves in the gardens of the *Mosque of Omar*, a grand edifice, built on the site of *Solomon's Temple*, and held second only to that of Mecca, in reverence, by the Moslems. We were hurried out with little ceremony. No Christian has ever visited it, except by stealth, and in disguise.

On the morning of the 17th, an English monk called, and offered his services, to make the circuit of the city on foot, with us. We passed out through the gate of Jaffa, and turning immediately to the left, found ourselves in the Valley of Gehenna, in which the Israelites sacrificed to Moloch. A little farther on, is the Valley of Hinnom; on your right, the Potter's Field, or the field of blood; and on your left, Mount Moriah. Near the junction of the Valley of Jehosaphat with

that of Hinnom, are the tombs of Absalom and Hezekiah. The sides of the whole valley, opposite the city, have been hollowed out as places of sepulture.

Having again crossed the Valley of Jehosaphat, we climbed Mount Zion, to the Golden gate. There is a tradition, that, by this gate, the city will be taken by the Christians, and it has consequently been built up. On entering the city again, by the gate of St. Stephen, we visited the remains of the buildings of the Knights of the Holy Sepulchre—otherwise Knights Hospitalers, or, as they were latterly called, Knights of St. John—now converted into an immense bazaar, and then returned to our dirty convent.

We have found the heat exceedingly oppressive, more so than in Egypt. I am at least three shades darker than I was on our arrival on this coast, but never was in the enjoyment of better health.

On the morning of the 18th, our whole party met at the gate of Jaffa, at sunrise, and started for Bethlehem, distant seven miles. We arrived in three hours, having a wretched road to travel. The whole population of Bethlehem turned out to meet us, and never have I seen such a villainous looking set. We proceeded immediately to the church built over the place of our Saviour's birth, where there is also a convent. Here we were handsomely entertained by the monks, who waited upon us at table, and were very attentive to all our wants. A great trade is carried on at Bethlehem, in rosaries, most commonly made from the stone of the date, but occasionally of mother-of-pearl, from the Red Sea. We were much pestered by the venders of these things, it being customary for pilgrims to purchase them, for their friends. After having been taken to all the holy places, they are consecrated by the priests, and held in high estimation by the devout. Those I now send you, for your Catholic friends, have passed through all the ceremonies.

We returned to Jerusalem in the afternoon. The Governor wished us to prolong our stay, having fitted up a house for us. This we accepted, for the party who were to follow us, and started for Ramah next day; here we again slept, and arrived on board ship the succeeding morning.

Immediately on the return from Jerusalem of the second party, we sailed for Beyrout. A few hours' run brought us to the ruins of Cesarea, and next day, in the morning, we were off Tyre. The boats were lowered, ship hove to, and all the officers who wished, permitted to go on shore. Tyre, "whose merchants were princes," never recovered from its destruction by Alexander. It has a miserable population of 2,000, and there is in it the ruins of a superb church.

In the evening, we anchored off St. Jean d'Acre, famed for the final check Bonaparte here received, to his conquests in Egypt. It is now in ruins. On the morning of the 28th, we were again under way, and at noon were off Sidon. The boats were lowered as before, and permission given to visit the shore. Sidon is not reduced to so abject a condition as Tyre, and still contains 15,000 inhabitants; but there are few remains of its former magnificence; and, pursuing our course, we, on the 29th, arrived at Beyrout, one of the most thriving places in Syria.

The American missionaries stationed here, came on board with a cordial welcome. They were extremely anxious that Com. Patterson, as the representative of the American nation in these seas, should visit Damascus, officially. The city is distant three days' journey, over both ranges of Mount Lebanon, and the roads miserably bad, but the place a gem worth seeing. It was determined to accede to the request, and I received an accustomed invitation to make one of a small party, consisting of Com. Patterson, his son, and two eldest daughters, Lieut. McKinney, the Rev. Mr. Jones, chaplain, our surgeon, three midshipmen, and myself. We set off on the 2d September, and small, comparatively, as our party was, twenty-seven horses, mules, and donkeys, were required for the excursion; it being necessary to carry every thing for our accommodation with us. We had to take not only provisions, but kitchen furniture, tents, &c, &c. We left at 10, A. M., dined with Rev. Mr. Bird, on Mount Lebanon, at 4, P. M., and proceeded to a village higher up the mountain, to sup and sleep, with Rev. Mr. Smith. The roads are terrific, so much so, that I almost regretted having left the ship.

We were in the saddle at daylight, the succeeding morning; stopped to breakfast, at 10 o'clock, within view of the Valley of Balbec, and immediately after descended to the plain between the two ranges of Lebanon. This we crossed, and, at the end of twelve miles, commenced the ascent of Anti-Lebanon, and stopped to dine, at 6 o'clock, and pitch our tents for the night. At daylight, on the 4th, we were in the saddle as before, and arrived at Damascus to dine, having made the journey, by hard riding, in one day less than the usual time.

The Valley of Damascus makes a beautiful appearance, in descending the mountains. Its fertility is almost unrivaled, and supports an immense population, there being not less than two hundred and eighty villages in the immediate vicinity of the city, any one of which can be reached in an hour's ride from its gates. The approach is very fine, being for miles through rich vineyards, orchards, &c.

Eighteen months ago, Christians were not permitted, openly, to visit Damascus. They were obliged always to appear in the costume of the country. We, of course, excited a great deal of curiosity, particularly the ladies; and the house we occupied was constantly crowded with visiters and others, endeavoring to get a peep at us. Whenever we went out, our trunks and toilets were ransacked, from curiosity, and tooth and hair brushes, &c, &c, underwent the closest scrutiny.

Mr. Farren, the English consul-general, and his lady, were very attentive to us. They have a coach, in which they wished our ladies to go with them to Tadmor, the ancient Palmyra. It is a journey of four days, but over delightful roads, and we regretted extremely, that our time did not allow us to accept the kind offer.

After seeing every thing worthy of notice at Damascus, we started, on the morning of the 7th ult., for Balbec, and arrived on the 9th; a hard and fatiguing ride, for which, however, we were amply compensated, by a view of the stupendous ruins, for which it is distinguished. A description of these, you will find in numerous books of travels. At noon, on the 10th, we left Balbec, arrived late in the evening of the

12th at Beyrout, and immediately got under way for Sidon; an invitation for a visit from the Commodore having been received, during our absence, from Lady Hester Stanhope, the eccentric and far-famed niece of the Earl of Chatham.

Her residence is two and a half hours' ride from Sidon. Here she has quite an extensive establishment, with gardens laid out in English style. She is tall and masculine in her appearance, and has, no doubt, been an elegant woman. She appears perfectly sane on all subjects, save astrology, on which she converses in the most unintelligible manner. On requesting to see her famous horse, her reply was, that he was at a distance. This visit completed the novel incidents of our cruise. We left Sidon on the 14th of September; on the 3d of October, off Malta, were joined by the U. S. ship "United States," Captain Ballard, from Smyrna, and on the 8th inst. arrived at our winter quarters at Mahon.

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HINTS ON THE MINERAL WEALTH OF THE UNITED STATES, SUGGESTED BY THE RECENT DISCOVERY OF DIAMONDS.

By Prof. Thos. G. Clemson, Corresponding Member of U. S. Naval Lyceum, &c.

If we cast our eyes over a map of the continent of America, and examine the bold features in its physical geography, portrayed in those vast chains of mountains which have their extension from north to south, almost from one extremity to the other, we cannot resist the conviction that these mountain ridges, of both sections of the continent, appertain to the same system, and that they are coeval. This is farther shown, by reference to the geological characteristics of South America, as presented in the very able descriptions of portions of that country, long since before the world.

The rich mines of Peru and Mexico have been proverbial,

almost from the time of their discovery; but it is only within, comparatively, a very short period, that the mineral wealth of the United States has excited any degree of interest in the public mind.

The region of country stretching along the Alleghanies, is disconnected, most likely, from the southern continent, only by the gulf of Mexico. This, freed from water, would be, certainly, in part, a valley of abrasion, washed out by currents—leaving on one side the resisting mountain peaks, which now form the West Indies, and on the other, those constituting the highlands of Mexico—depositing the sediment along the northwestern coast, and being, it is not improbable, one of the causes of the formation of the increasing banks of Newfoundland.

There is also a great analogy existing between the mineral species of the two sections of the continent, as well as in their geological formation. The gold regions of North America, like those of South, produce gold, silver, platina, and its associates, copper, zircons, diamonds, &c, &c. The total amount of these substances, that have come from South America, is immense; but instead of having been a great and lasting source of prosperity to that country, and to the worn-out Mother of her Republics, which undoubtedly would have been the case, had these natural mints been properly fostered and governed, by enlightened legislative interference, they have, on the contrary, proved to both the veriest banes to prosperity.

In the year 1830, whilst at the royal school of Mines, in France, I received specimens of deposit dirt from the gold region of the Southern States. After the proper examination of this ore, I was convinced of the presence of platina in those formations. On a recent excursion through this region, as far south as Georgia, my friend, Mr. Humphrey Bissell, of Charlotte, North Carolina—a gentleman whose talents and indefatigable exertions in the cause of practical and correct science, have secured to him a most enviable reputation—assured me of the correctness of this conviction, and that he himself had possessed specimens of that useful and valuable metal, from those sections of the Union.

Accounts have frequently been heard from different quarters of our country, of the existence of diamonds, sometimes of an immense size. These, however, have invariably turned out to be false reports; quartz, crystals, &c, &c, having at all times been vulgarly termed diamonds. I had the honor, notwithstanding, of presenting to the inspection of the members of the Geological Society of Pennsylvania, at a late meeting, a gem of the species diamond, from Carolina. This interesting and valuable product is of the variety of the diamond called spheroidal, with curvilinear edges and faces. Its water, as far as can be judged from appearances, in its rough state, is fine. It weighs 0.3 grammes, and was caused to be found by Mr. Humphrey Bissell, and identified by that gentleman and myself.

MALARIA, PRODUCED BY VEGETABLE AND ANIMAL PUTREFACTION, AS A CAUSE OF FEVER.

By Usher Parsons, M. D., Professor of Anatomy and Surgery, Providence, R. I., late Surgeon in the U. S. Navy, and Corresponding Member of the U. S. Naval Lyceum.

IT is supposed, that one-sixth of the human species die of fever. As a majority of cases have seemed attributable to natural causes, unremitted attention has been given to their investigation. But notwithstanding the importance of the subject, and the weight of talent that has been employed, it involves important questions, that still remain undecided; among the most important of which, are those we have selected as the subject of the present communication.

In discussing these questions, our attention will be directed, *first*, to the effect of vegetable decomposition; *secondly*, to that of animal decomposition; *thirdly*, to the comparative influence of both, as a cause of fever.

I. *The effect of vegetable decomposition on the human*

body.—The depopulation of particular regions—the destruction of armies quartered therein—and the greater prevalency of fevers at certain seasons, than at others, gave rise to a particular examination of the soil, face of the country, and atmosphere, peculiar to those places. It was soon ascertained, that fevers prevailed most in marshy, moist ground, wherein vegetables, having grown, die and putrefy. This led to the belief, at an early period, of their being caused by putrefaction, and this belief has become so generally and firmly established, that a statement of it, at the present day, wears the air of a truism. It may, however, not be amiss, on the present occasion, to re-examine the evidence on which such belief has been maintained.

1st. Is fever proportioned in frequency and intensity, to the amount and rapidity of vegetable decomposition? The rapidity of this process is regulated by the degree of heat and moisture. Either of these agents, without the other, fails of producing it. If moisture be increased till it excludes air from the surface of vegetable matter, decomposition is suspended, and the same effect is produced, if heat be increased till moisture is dissipated; as also when the surrounding atmosphere is reduced to the freezing point. But when the temperature ascends from 32° Fahrenheit, the proper quantity of moisture being present, decomposition increases in direct ratio with it, till the degree of heat rises to 100°. Let us now inquire whether the frequency and intensity of fever prevailing in countries where decomposing vegetables abound, is in proportion to the degree of heat and moisture.

In respect to *heat*, we may observe that the ancients discovered, at an early period, that its prevalence coincided with that of *fever*. To this agency alone, they attributed the malignant fevers that wasted their armies, and depopulated many regions. They observed, too, that frost arrests, or mitigates all fevers, which they had ascribed to the influence of this cause;—that it stayed the progress of intermittent, bilious-remittent, and yellow fevers;—that such fevers were unknown in the winter season of temperate climates, and that they commenced only in the summer, and declined in autumn. Later writers have observed, that within the tro-

pics, no season is exempted from the occasional appearance of these fevers, and that in some parts, they prevail through the year;—that winds from the north, even in summer, render them milder in all places; that even the shade of trees moderates their violence, while this, on the other hand, is greatly augmented, when the trees are cut away, and the surface of the ground left exposed to the direct influence of the sun. Hence, the first settlers of a wilderness suffer less from fever, than those do who arrive immediately after forests are cleared, and before decaying substances are removed from the ground by cultivation. The severity and duration too, as well as the frequency of fever, is influenced by the degree of heat. This is observable both in respect to different seasons, and to different latitudes, and also to different altitudes of the same place. In some latitudes, vernal intermittents are succeeded, as the season advances, by bilious remittents, corresponding in severity to the elevation of temperature; and when this is very high, and long-continued, they assume the malignant type. In the autumn again, they become milder, and are finally checked on the accession of frost. In respect to their duration, we find that in England, and in corresponding latitudes on the continent, fevers appear in August, and prevail through September, declining as the cold weather approaches. In the Netherlands, they appear in the latter end of July; in the campagna of Italy, and in Spain, early in July; in Sardinia and Minorca in June, and are prolonged till late in November; in Egypt in May; and they prevail both earlier and later in Gambia, nearer the equator.

The same remarks apply to this country, making allowance in comparisons with Europe, for difference of temperatures in corresponding latitudes. The fevers we have mentioned are hardly known in Quebec; are rare and mild in New England, excepting in extremely hot seasons, when they produce yellow fever; its exemption from intermittents and remittents being ascribable to other causes than an appropriate degree of heat, and which will be noticed hereafter. Passing southward, we find the frequency and severity of fevers increasing in Maryland and Virginia; still more in

South Carolina and Georgia, and appearing earlier and later till we reach New Orleans, where fever of a malignant character prevails during a great part of every summer.

In respect to difference of altitude, heat, in conjunction with other causes to be noticed, acts with more effect on the low grounds of tropical climates, than on elevated situations, where the temperature is cooler. Monks' hill, in Augusta, says Dr. FERGUSON, is quite exempt from yellow fever at the height of six hundred feet. On the Ridge, a sloping hill in India, three hundred feet above the marshes, the yellow fever of the marshes disappears, and the common remittent takes its place, while at the top of the Ridge, five hundred feet high, the troops are exempt from disease.*

The same remark applies to the fevers of Cuba. "Tivoli, less unhealthy by far than Rome, is three hundred feet above Rome. Sezza, exempt from diseases, is nine hundred feet above the Pontine marshes."† It appears then, that in proportion to the degree and duration of heat—other causes concurring—is the severity and duration of fevers, until the temperature rises to 100°. "Putrefaction takes place most readily," says FORDYCE, "in a heat of 100° of Fahrenheit's thermometer. It goes on much more slowly in a heat of 110°; it goes on more slowly in *less* degrees of heat than 100; and scarcely at all at 40°."

In respect to moisture, it may be observed, that when this is wanting, fever rarely occurs; and when it is entirely dissipated, fevers that have prevailed, disappear. It has a most important influence in modifying the influence of heat. In some dry situations, the hottest seasons are the healthiest. LIND states, that the hottest season of Senegal is the driest, and at the same time the healthiest. The inhabitants near the hot deserts of Africa, are invariably free from epidemic fevers. "In the hot countries within the tropics, in general, the hot and dry season is healthy." Lind, speaking of Guinea, says, this, like most tropical countries, has, properly speaking, only two seasons, the wet and the dry. The former is of about four months' continuance, and is the season of sickness;

* Amer. Quarterly Review, Vol. IV. p. 296. † Ibid.

whereas, for many months in the dry season, most parts of this country are equally healthy and pleasant with any in the world. No sooner, however, do the rains set in, than the ravages of disease commence, and continue throughout the wet season, and afterwards, till the attendant moisture is evaporated. As soon as this is effected, the health of the country is restored, except in those places which continue wet throughout the year. The same thing occurs in this country; wet seasons, if hot, being generally more sickly than dry ones. The wet seasons of 1804, 1821, and 1823, were very sickly, and the dry one of 1822 was, comparatively, quite healthy. If there be exceptions, if dry seasons produce local epidemics, they are uniformly in marshy places, or in artificial ponds, where evaporation exposes decaying vegetables that were previously inundated. Hence it is that there are some, who, even in the present advanced age of medical science, believe that moisture alone will produce intermittent, remittent, or bilious fever.

But let such inquire of those who sail on the great lakes of this country, particularly Erie, and they will find that vessels anchoring, in the months of July and August, on those parts of its shores that are marshy, have their crews affected either with intermittent or remittent fever, according to the advancement of the season, and that new cases cease immediately to appear, on sailing from such anchorage to the central part of the lake, or to a port having a bold shore, or which is destitute of decaying vegetables. In sailing from this lake, during midsummer, to lake Michigan, crews are apt to suffer more or less with fever, from passing through the river St. Clair, especially if detained by head winds; and the inhabitants of both its shores have suffered from fever and ague, more than almost any other section of country; yet, on entering lake Huron, new cases of fever, in such crews, immediately cease to appear.

From the sick records, which I kept, in the squadron on lake Erie, I find that the ships anchored at Put-in-bay, with healthy crews, in the month of August, 1813; and that while there, and at Sandusky Bay, a few miles from it, which was still more marshy, there occurred, in the space of three weeks,

more than one hundred cases of bilious remittent fever, and forty of them in the flag-ship, her crew consisting of one hundred and thirty men; that on sailing, at this time, upon a short cruise across the lake to Malden, the fever was entirely stayed; but that new cases began to appear immediately on returning to our former anchorage, and that after the 10th of September, the day we sailed some ten or twelve miles, to meet the enemy, no new cases occurred. In these lakes, there is no salt to correct the febrific quality of the moisture in ships, and yet they are healthy when in the centre of the lake; whilst persons have, within my knowledge, caught intermittents and remittents, by passing, in a steam-boat, in a clear night, through the *marshes* between New York and New Brunswick, although the water all the way is salt.

But, while we deny that moisture is the sole cause of such fevers, we repeat that it is necessary for the progress of putrefaction, and consequently, for the generation of fever. If there are apparent exceptions,—if some places that appear arid, are nevertheless sickly, it will be found that they are remarkable for having dews at night, which act like rain on decomposing vegetables.

But if, on the one hand, a total dissipation of moisture will arrest the progress of vegetable decomposition, and at the same time of fevers, so on the other hand, the same effects will be produced by its superabundance. Thus, a bilious fever was arrested in Brabant, by inundating a marsh in its neighborhood; and Sir JOHN PRINGLE relates, that the inhabitants of Breda adopted the same expedient with success. The marshes of Delaware are innoxious in seasons when they are completely overflowed. "The same is said by DAZILLE, of the marshes of Cayenne." Excessive rains have produced the same effect, in many places in this country. In short, whenever moisture is sufficient to exclude air, the process of decomposition, as before stated, is suspended, and with it also the prevailing fevers we have mentioned. It is only, then, where heat and moisture are duly proportioned, that fevers are produced, and these will be severe in proportion to the combined activity of these agents, a sufficient

quantity of dead vegetables being present, for them to act upon.

A sufficient quantity of vegetables, I repeat, for this is as important to the morbific result, as the agency of heat and moisture. Whenever this is most abundant, heat and moisture acting in due proportions, there fevers will be most prevalent,—their intensity or malignancy increasing according as the heat approaches the degree of 100° of Fahrenheit. Salt marshes have been supposed to form an exception, but this is a mistake. "They produce fever in Normandy, and on the French shores of the Mediterranean, in Spain, and throughout the south of Europe." In Holland, the severest seasons of fever have succeeded irruptions of the sea. The same thing is observable on our own sea-coast; and several writers have observed, that putrefaction is more rapid whenever salt and fresh water intermix upon vegetables, and that salt marshes situated at the confluence of fresh and salt water, are more pernicious to health, than marshes surrounded by fresh water—and the effluvia exhaling from them, in hot weather, every one must acknowledge, is more offensive.

In tropical countries, sickness prevails most in low and marshy plains, as Benin, New and Old Calabar.*

"All those cities and stations in Africa, Asia, and America, which have been the grave of unnumbered thousands, are situated at the mouths, or on the banks of rivers, in flat countries, which, in the rainy season, become one vast morass."†

In more temperate climates, similar spots are the seat of endemic fevers of a milder character. The artificial morasses, produced by building mill-dams, are the spots noted for disease; of this, every neighborhood affords instances.‡ Where vegetation is rank, and forms a thicket of grass and reeds, and these become moistened and matted together, they form what is termed a jungle. This kind of material is so fruitful a source of fever, that in many places it has given

* Lind. † Ibid.

‡ Cooke, Med. Record. Vol. VII. p. 451.

rise to the name of jungle fever. The swamps and shores of lakes, ponds, and rivers, when first cleared, present to the sun great quantities of underwood and jungle, which had before been excluded by dense foliage. "The dreadful fever, affecting the first settlers of the Gennesee country, from 1796 to 1800, arose from their clearing and settling the rich bottom land."* Doubtless, much of the salutary influence of the foliage of trees is ascribable to the changes produced upon the air by vegetable respiration. The ancients held their groves to be screens to their health, and "the unhealthiness of the Porta del Populo at Rome, arose from cutting down a wood that served as a screen to that part of the city." When cultivation of the soil has taken place for some time in the new countries, and vegetable matter is decomposed on the ground, and dried by ditching and draining, the inhabitants suffer less from fever—hence intermittents which, in their early settlement, prevailed extensively in the western parts of Massachusetts and in Connecticut, on the rich bottom lands and *intervales*, have quite disappeared. But it is unnecessary to dwell longer on the well known febrific tendency of marshes, and other moist places covered with dead vegetables, in hot seasons. It is known not only to the profession, but even to the vulgar, and to the less enlightened nations—to the lower orders of Europe, to the negroes of Africa—and it is familiar to all the yeomanry of this country. Scarce an individual can be found in the profession, who doubts that intermittent, remittent, and yellow fevers, are proportioned in frequency and intensity, to the amount and rapidity of vegetable decomposition.

This is, however, to be understood as referring to vegetables that are similar in kind. Different vegetables vary in their morbific effects, while undergoing decomposition. It is not produced at all by dead peaty bogs, or by peat which carries on no vegetation. Blades of grass are less baneful than more succulent plants, as cabbage and the bulbous roots, potatoes, turnips, &c. Large wood decays more slowly in successive concentric layers, and generates miasm slowly in

* American Quarterly Review.

proportion to its bulk, but "the poisonous effects of putrefying flax, hemp, indigo, and coffee, are well known in the storehouses on the wharves of New York and Philadelphia." Perhaps this more deadly character may be owing to confinement and concentration, and to the fact that a sort of fermentative heat is generated in the centre of the mass.

If required to specify instances in this country, wherein fever proceeded from vegetable decomposition, we might name a great number that are recorded in the early medical journals of New York and Philadelphia. The Medical Repository was commenced early after the prevalence of yellow fever in Philadelphia, and other seaports, and received the reports of physicians respecting it, from every quarter. The first five volumes contain a large number of instances, where yellow and malignant fever was decidedly and unequivocally referable to vegetable decomposition. In some instances, fever was traced to damaged coffee; in others, to vegetable filth in docks; in others, to marshy ground; and some sporadic cases occurred in houses whose cellars contained rotten cabbages, potatoes, and turnips. The prize dissertation of Dr. COOKE, in the Medical Recorder for 1824, furnishes more histories than any other publication, of the remittent and intermittent kind of epidemic fevers, in the Middle and Southern States, ascribable to no other cause than the foregoing.

"And indeed, so intimate and obvious is the connection between such cause and effect, in a vast majority of cases, that wherever fevers of the last mentioned character appear, we are warranted in ascribing them to such causes, even where its existence is not manifest."*

The febrific cause may arise from stagnant pools, from the banks of rivulets and fish-ponds in the neighborhood, that were never suspected of it; or it may be brought from a distance by unknown currents in the air, and affect the residents of an apparently healthy situation. It may do this too, when persons residing nearer the source, but in places of different altitude, shall escape its baneful influence. "Sometimes a house on the very bank of an unhealthy river, will be com-

* Macculloch.

paratively healthy, while places, even high grounds, at a distance, will be affected, manifestly because it (malaria) is transported thither by breezes or currents of air." Dr. MACCULLOCH, in his invaluable work, cites numerous cases, in proof of this position.

Generally, however, the baneful product of vegetable decomposition, if undisturbed by breezes and currents, hovers around its source in the lower stratum of the atmosphere, and in the same temperature of it ascends only to a certain height, leaving the other strata comparatively free; hence the upper stories of houses near it are, with few exceptions, depending on vertical currents, far more healthy than the ground floors. When the air is heated by artificial fires, or by the sun, the poisonous exhalations are rarefied, diluted, or dispersed, and are less morbific; but on the approach of evening dew, they are condensed, and, as it were, precipitated nearer the earth, where meeting new exhalations, they are concentrated, and more baneful in their effects.* Hence, the beginning of the evening causes more cases of fever than midnight, when the poisonous exhalation is completely condensed upon the soil, and this last more than mid-day, when it is rarefied, and diluted, and dispersed by heat."†

In respect to the distance to which malaria may be conveyed horizontally, by currents of air and wind, various opinions have prevailed, some having limited it about the spot where it emanated, while others think it may be transported many leagues. BLANE presumes that the malaria never reaches beyond three or four hundred yards in a horizontal direction, provided it be calm. Macculloch thinks that the intermittents of the west of England and Scotland, are caused "by malaria, transported from Holland, or the shores to the northward of it, by fog and east winds." There are numerous records of ships that make the distance which malaria has come, and affected their crews, from two to six

* Lind.

† The Italians say, that however deleterious the evening air may be, the night air after 10 o'clock is not so.—*American Quarterly Review, Vol. IV.*

miles. But the maximum distance is not yet satisfactorily ascertained.

But what is the substance exhaled, that bears so much disease on its wings? "Perhaps the best and the truest account of its nature would be," says Dr. Macculloch, "an acknowledgment of utter ignorance." Miasma or miasm is its common name, and those who maintain that morbific exhalations proceed from animal as well as vegetable substances, distinguish this by the term marsh miasma. "In Italy, the locality of such putrefying vegetables go by the name of maremmes, and the infectious matter there generated, when mixed with the atmosphere, is malaria—bad air." It was the ancient opinion, that the deleterious quality of the air impregnated with it, is owing to animalculæ, which invade the body through the lungs, sometimes, perhaps, through the stomach, and even through the skin. "This is a speculation," says Dr. Macculloch, "that dates as high as LUCRETIUS, VARRO, and COLUMELLA, which seems to have been revived in the days of the microscope, by KERCHER, and some others, and appears naturally enough to have found favor with Linnæus." A learned reviewer of Macculloch, at the South, has adopted this opinion, and maintained it with many plausible and ingenious arguments, which, but for their lengthening this paper beyond reasonable bounds, I would gladly insert.*

It was attempted, by many learned chemists, to discover the poison among the ascertained chemical gases, and it was referred successively to carbonic acid, azote, hydro-carburetted, hydro-phosphuretted, and hydro-sulphuretted gas, and even ammonia, and also to a yet undiscovered compound of azote and oxygen, called septon. But as these gases can be applied to the human body in a more concentrated degree in the laboratory, without producing fever, it was attempted, by means of analysis which modern chemistry furnishes, to examine the air produced by marshes, and to inquire whether it did not really contain some peculiar volatile substance or compound, an *unknown* gas, the true source of the evil.

* See American Quar. Review, Vol. IV. p. 286.

The eudiometrical experiments of GOTTONI and MOSCHATI, produced no results, as might have been anticipated. Nor is malaria cognizable by the senses. It is supposed, by common observers, to be the same as the effluvia arising from marshes, which makes so strong an impression upon the olfactories, in the twilight of evening. But although often, and perhaps generally, combined with such effluvia, yet "we do know," says Dr. Macculloch, (p. 50,) "from ample experience, that malaria occurs in abundance, where there is no smell."*

How does malaria (for such I shall call febrific exhalations) find its way into the system? Some have supposed that it is admitted by every accessible surface. Others have contended that it affects the system through the stomach; and others, that it acts on the nervous system through the olfactories;† others, that it is absorbed by the skin;‡ and a still greater number, that it is inhaled by the lungs into the circulation. There is no positive evidence, however, to establish any one of these theories. The suggestion that the stomach was the channel, arose from the fact, that when malaria produces malignant yellow fever, it affects the stomach, producing vomiting of malœna; hence many physicians have advised persons who are exposed to malaria, to chew substances, and not swallow their saliva. Among these was the late Dr. MILLER, of New York, who afterwards entertained the belief that the lungs are the chief, if not the only channels of admission. It can hardly be supposed that the saliva, if impregnated with malaria, could blend with the food in the stomach, while undergoing the process of digestion, and retain any putrid quality, since it is the nature of the gastric juice to correct putrefaction; and as to the strong bearing of yellow fever upon the stomach, we know from the experiments of GASPARD, MAGENDIE, and others, that water, impregnated with putrid vegetable substances, injected into the veins, will produce the same gastric inflammation, the same vomiting of malœna, as appears in yellow fever, which shows that the stomach is not the necessary, and probably,

* See also p. 73 and 75. † Rousseau. ‡ Brochi.

from its antiseptic power, is in fact not the real organ of entrance. That the lungs and skin are the entrances, is the more general belief, and is supported by better evidence. It was ascertained by BICHAT, that fetor from putrid animal matter gained admittance through the skin. Having discovered that the flatus from his bowels acquired the smell of the air of his dissecting room, he respired for some hours through a tube which led into the open air, while he remained in a room containing highly putrid matter. The same effect was produced on the flatus, as when he respired the air of the room, and the same effect was produced by respiring the air of *the room* through a tube, while he remained some hours in a pure atmosphere. These are offered as analogical proofs only, and even as such they are very imperfect, for the odor itself, as we have before observed, is not the malaria or febrific principle; and it is here an animal, not a vegetable fetor, that Bichat absorbed into his circulation, from the lungs and skin.

What are the diseases produced by malaria?—This subject has received the particular attention of Dr. Macculloch, in his invaluable work on malaria. Few people, in this country, are aware of the multiplied and varied forms of disease, generated by this noxious principle. It is believed by this author, and admitted by some others, who possess the best means of information, that nearly half the diseases which visit the human race, proceed from this cause. Dr. Macculloch enumerates the following: intermittent and remittent, both simple and malignant, and nervous fever; dysentery and cholera; dropsy, œdema, obstructions of the liver and spleen; neuralgia, and particularly that form of the tic douloreux, to which he would perhaps add, (Dr. Cooper thinks,) the dengue of Charleston and Havana. He is in some doubt as to scrofula and goitre, hebetude of intellect, and general lassitude, rickets, hernia, rheumatism, sciatica, tooth-ache, asthma, peripneumony, dyspepsia, palsy, phthisis, and chlorosis. But most of these are certainly produced by other causes, and some of them are probably not entitled to a place in the list. The subject proposed for this dissertation embraces only fever, and under this head may be ranged as the

offspring of malaria, the various kinds of intermittent, remittent, yellow fever, and a great proportion of the autumnal continued fevers of New England, whether inflammatory or typhoid. The yellow fever, as we shall attempt to show, may proceed from other causes than vegetable decomposition, as also typhus gravior or putrid fever, whilst typhus mitior is oftentimes the consequence of fatigue and other debilitating causes. A minute examination of the localities of this last disease in New England, will discover it to be more endemic around factories, and on the shores of our rivers that have been dammed, and produced marshes, than elsewhere.

To the above list may probably be added some cases of dysenteric fever and cholera morbus. This list of fevers bring in their train many chronic affections, such as visceral complaints, that may partake more or less of the nature of fever.

(To be continued.)

U. S. SHIP DELAWARE, IN 1833.

By the author of "A Visit to the South Seas."

No. I.

"Where art thou going, mighty ship?
Thy sails are on the wind,
And the ocean, with a roaring sweep,
Is racing on behind.
A hundred guns are on thy deck,
And a thousand men below,
And thy wings are spread without a speck,
As white as driven snow."

THERE are circumstances, in which the well-known drab-colored envelope of the Navy Department is any thing but a welcome sight, to a subordinate in the service, whatever may be the *esprit du corps* with which, in ordinary cases, he meets a call to the duties of his profession. This was

peculiarly the case with the writer, in the spring of the year 1833; and the receipt, early in June, under its accustomed cover, of the laconic epistle—"Sir, you will proceed to Norfolk, without delay, and report to Commodore ——, for duty on board the U. S. ship Delaware. Yours, &c, &c,"—produced an effect on the nerves, scarce less startling than an unexpected touch of a well-charged electric battery.

To obey the orders was impracticable, except at a sacrifice which I little cared to make, and to solicit a release from them, contrary both to my principles and feelings in the case. It only remained for me, therefore, to seek to be excused from joining the ship, till she should be ready for sea; an indulgence promptly granted to a "non-combatant," and "idler," and to which was added the further kindness of permission, in place of proceeding to Norfolk, to meet the "Delaware" at New York, where she was to touch, and receive on board the Hon. Edward Livingston, the newly appointed ambassador to France.

I was in Philadelphia at the time, and under engagements making it important that I should remain till the latest period possible, before the final departure of the ship. It was, therefore, only when the Norfolk Beacon reported the "Delaware" fairly outside the Capes of Virginia, that I threw myself into the mail coach of the same evening, for New York—not without an apprehension, that even the night's travel might not save me guiltless of missing my ship. It had been rumored, and was extensively believed, that she would not cross the bar at Sandy Hook, but receive her passengers from a steamboat, and proceed on her destination without coming to an anchor. In such case, there was a possibility, if not probability, that the gallant vessel, with her noble freight on board, might be already ploughing her way across the billows of the Atlantic.

The dawn of the succeeding day, however, put an end to the feverish anxiety of the night, on this point. A first glance over the beautiful bay, in descending the high ground behind Jersey City, presented, through the grey of the morning, a mass of hull, and loftiness of spar and rigging, in a

ship at anchor off the Battery, which could belong to none other than the floating castle soon to be my home. I was still in time for my station and my duty.

On the 12th of August, the ship dropped down to the quarantine, with orders for all hands to be in readiness for sea, the next morning. The same day Captain Ballard, her commander, with as many of his officers as could be spared from duty, dined with the corporation of the city. The distance at which the Delaware was now at anchor, obliged them to remain from the ship over night, and early after breakfast on the 13th, they, with all other loiterers on shore, were in the ferry-boat at Whitehall, to be taken on board in her trip across the bay.

The recollection of the circumstance is the more vivid, from a little incident at the time, of which I was spectator; trifling in itself, but of a character not to be lost on the heart of a sailor.

The greater number of the passengers in the boat, apparently, were farmers of Staten Island, returning to their homes, from the market of the morning. The full dress uniform of the officers—the embroidery and anchored button, the epaulettes, the sword and chapeau—which the civic dinner had put in requisition, and which there had been no opportunity of laying aside, with the polished air of the wearers, appeared in such strong contrast, in the groupings around, to the every-day garb and plain exterior of the hardy agriculturists, that I was insensibly questioning, in my own thoughts, what the possible impression of the naval service, as thus exhibited, on the minds of the "bone and sinew" of the land, might be, when one of the most hale and respectable among them, with some little embarrassment, addressed himself to a fine looking young officer—one who, to the embroidery and decorations of his grade, added in attitude and manner, no little of the bearing of his profession. Standing next to them, I necessarily heard the conversation.

After a remark or two on the stateliness and noble appearance of the "Delaware," which we were now approaching, her destination, time of sailing, &c, the farmer said, "I am a stranger to you, sir, but will you not do me the favor

of stepping below, and taking a glass of wine with me?"—a civility which the midshipman courteously but firmly declined, adding, "I seldom drink any thing of the kind, sir, and never at so early an hour of the day." "Nor I either, sir," quickly replied the landsman; "I do not ask you to drink, because I wish any thing myself, but because I respect and honor your profession, and the dress you wear. We, here on the land, in our homes of comfort and plenty, with our families and friends around us, too often forget what we owe to the brave officers of our Navy. In peace, you leave your country and all dear to you, for the dangers of the sea, to protect our ships and commerce, in all parts of the world; and in war, you shed your blood, and lay down your lives for us—God bless you!" There was a liberality and patriotism in the feeling dictating this language, and a simplicity and warmth in the manner in which it was uttered, that—with home, country, and friends, just about to recede from our view for months and years, if not for ever—brought a tear to my eye, and an involuntary echo of the "God bless you!" of the honest man, from my heart.

The haste with which I had been hurried away, had scarce allowed of a farewell to my nearest friends, and a secret hope was lurking in my bosom, of yet another visit to the city, through some accident of weather, or other cause of detention in the bay. But at 4 o'clock, the wind and tide decided against me; and "all hands! up anchor ahoy!" loudly bawled from deck to deck, by the boatswain and his mates, quickly followed by the jig and hornpipe, in the heaving of the crew at the capstan-bars, gave assurance that we were off.

The bay of New York, with all its beauty and loveliness, never before appeared more lovely. The atmosphere was as translucent as the purest ether could make it; and the city, the basaltic cliffs of the Hudson, the blue hills of Jersey, the green islands studding the harbor, and the moving panorama on its waters, on every hand around, presented just such a picture, in the brilliancy of the declining sun, as a lover of his country would wish to have before him, in bidding adieu to his home, as a last image for memory to feast upon.

Association, too, was busy on the scene The spring and early summer just gone by, had been balmy and beautiful, almost without precedent in our climate. For a first time for years, I had, during them, been chiefly in New York, and for weeks had given myself almost daily to the unrestrained enjoyment of the rambles and drives, the scenes of beauty, accessible either by land or water, in every direction around. And now—the recollections of boyhood and early youth aside—wherever my eye fell, whether on the woods and rocks of Weehawken, the heights of Brooklyn, and shores of the bay adjoining, or on the hilly summits of Staten Island, just at hand, some vision, fascinating to the heart, under the circumstances of the moment, rose vividly on the imagination, either in the sober and wholesome musings of the solitary hour given to the works of God, or in the cheerfulness and gayety of the family pic-nic, endeared to memory by the presence, not only of the chosen friends of older growth, but by the buoyant spirits and playful gambols of those also, who, freed for the time from the restraints of the nursery and school-room, were sporting round like the lambs of a fold, in the sunny pastures of the spring.

From the poop of our magnificent ship, I gazed again and again upon every familiar and long-loved feature of the scene, till—as her sails dropped gracefully from their furlings, and spread their bosoms to the breeze, they faded rapidly from further view—I was ready to reproach myself for the willingness with which I became a voluntary exile from a land, stamped, in its length and breadth, with so much that is beautiful in nature, and so replete, in its prominent characteristics, with every blessing most precious to the heart of man.

We anchored for the night at the Horseshoe, inside the Hook, and at sunrise the next morning, passing the light-house on the Point, crossed the bar to the open sea. It had been a question, whether a ship-of-the-line, with her full equipment on board—crew, armament, provisions, and water—could pass the bar in safety. It was now the period of neap-tides; a fresh wind from the west rendered the flood less full than ordinary; there was more than usual swell on the bar, and

it wanted two hours of being high water; still, with Norris for our pilot—who won the admiration of all on board, by the dignified, gentlemanlike, and masterly manner in which he performed his duty—we accomplished it without difficulty or danger. Twice, as the swell passed from under her in the shoalest water, she touched bottom slightly, but only in a manner to give new excitement, without a mingling of apprehension to those sensible of it. Mr. Livingston and family had not yet joined us, and we "lay off and on," during the day, waiting his arrival by a steamboat. It was near sunset before this came alongside, and our passengers were safely received aboard; when, another picture of beauty was presented, as—amidst the echoings and smoke of an ambassador's salute, the music of our band, and the waving of hats and handkerchiefs from friends, of both sexes, in the returning steamer—we addressed ourselves cheerily to our voyage, and, with all sail set, took the freshness of the wind,

> "While the ocean, with a roaring sweep,
> Came racing on behind."

A first ten days at sea, are ordinarily little more than a blank in the life of the voyager; and, on board a man-of-war just from the dock yard—independent of the listlessness, ennui, and other discomforts incident to a change from land to sea, with which most persons are oppressed—that period, at least, is requisite for the right organization of the ship's company, and the systematic arrangement of its various departments of duty. It was not, therefore, till the second Sabbath after our departure, that our passage furnished any thing claiming a recollection at the present time, or a scene worthy of being treasured in the imagery of the heart. This, however, merits notice, as our first day of worship—the commencement with us, for the cruise, of "Sabbaths at Sea," which, there is a hope, will prove, in the great day of accounts, to be not without a record for good, in "the book of remembrance, written before the Lord."

To the mind, ever rising above the darkness and death of a perishing world, a worshiping assembly, seemingly sincere in the devotion in which it is engaged—with thoughts

absorbed in the truths of the Gospel, and hearts touched by the spirit it breathes, is, in any circumstance, and in any place, an interesting and impressive scene—whether presented in the log cabin of the frontier, where, in rudeness and simplicity, two or three only are gathered together, in the name of Him who "lived, and died, and lives again;" in the quiet repose of the country church; the cushioned ease of the city chapel; or in the proud cathedral in which kings and princes

"Lift up the voice,
And bow the knee in prayer."

It has been my privilege often to behold the worship of God, under all these varied aspects, and not unfrequently to experience the sympathetic influence peculiar to each, on the best affections of the heart. Still, I am disposed to believe that no one of them is calculated, in its circumstances and associations, more deeply to touch the sensibilities of the pious mind, unaccustomed to the sight, than that exhibited in the worship of the sea. This, even on board the little coasting schooner—as I have witnessed it—scarce out of the sight of land, where the master and his mate, a single sailor and a cabin boy, form the congregation, is far from being without its effect upon the eye, or its moral on the heart. The same is true of the merchant ship, with the twenty or the thirty of her crew engaged in worship, on the wide and distant sea; but it is to the man-of-war that we are to look, for the most imposing spectacle of the kind. Each of these, in its class, under such circumstances, presents, in the midst of the ocean, a striking scene; and when the line-of-battle ship thus becomes a place of prayer, there is, in the magnitude of her dimensions, and the loftiness of her height, in the throng of her numbers, and the deep swellings of her band, an assemblage of imagery, which makes her distinctively the Cathedral of the Seas.

Such to me, at least, seemed the "Delaware," on the occasion referred to. The sky was bright and beautiful, the ocean smooth and tranquil, the ship in perfect order, and the crew in uniform dresses of white and blue. The gratings

of a hatchway, placed upon shot boxes, made a platform for the preacher, while the capstan, spread with the appropriate drapery of the stripes and stars of our national banner, formed at once his desk and pulpit. Around this stood the ship's company, thickly clustered, with uncovered heads. Farther aft, on the quarter-deck, were grouped the commander and officers, and the ambassador and his suite, while the poop-deck above was occupied, in the manner of a gallery, by the guard of marines, and the band.

It is customary, in the service, for the commander of a ship, or the first lieutenant, at his request, once a month, to read to the ship's company, thus assembled, the laws regulating the discipline and police of the Navy. This was now, for a first time, done; after which Captain Ballard, in an appropriate and impressive address, fully expressed his sentiments, wishes, and determination, in reference to the moral economy of the ship, and strenuously urged upon the crew the importance of giving serious attention to two vices, in particular, to which, unhappily, the sailor, in too many cases, is addicted—those of profane swearing, and of grog-drinking. The evil of these he pointed out, in an able and happy manner; and while an assurance was given, that the first should meet the punishment authorized in the rules just read, he earnestly advised, in reference to the other, that all who now drank the governmental allowance of whiskey, should cease to draw it, and receive in its stead, the sum in cash, guarantied in such cases, in place of the ration, by the Navy Department.

The time was—and at no remote period—when profaneness on board ship, and drunkenness on shore, in place of a reproach, were, by many, thought almost essential in the qualities of a good seaman. We need no other proof that a change, and no unimportant one, has taken place in this respect, than that thus presented—the commander of a ship of the line, endowed, in no ordinary degree, with gifts both in person and in mind, becoming the proud station he fills, denouncing, from the quarter-deck, to his officers and crew, the one, not only as a habit utterly useless, but as a vice, degrading, equally, to man and gentleman, and stigmatizing

the other as the prolific parent of evil, and of every debasing quality.

The anthem, "O come and let us worship," in preparation for the more sacred duties of the day, was now heard from the band, its well known strains breathing through the silence of the ship, far over the waters around, with no little of the effect, both on the ear and on the heart, of the symphonies of the organ in a church on shore. The customary prayer, interspersed with hymns, and the reading of the Scriptures, followed—the whole concluding with a discourse from the words, "I will wash my hands in innocency; so will I compass thine altar, O Lord," as illustrative of a spirit of mind and determination of heart, peculiarly befitting the outset of a voyage. It is chiefly by his cruises that a man-of-war's-man "takes note of time;" and the beginning of a new cruise is, to him, in this respect, like the return of the new year to the dweller upon land. To both—where there is not a recklessness, whether on the sea or on the shore, alike to good and evil, to life and to death—their uses are the same, in bringing to the heart salutary reflections of penitence for the past, with resolutions of good for the time to come. In the commencement of a cruise, too, there is, in a majority of cases, a mellowness of the affections, from the separation from home and friends which has just taken place, and a susceptibility to those influences from above, which there are few who have not from time to time known, favorable to such impressions on the conscience and the heart. How happy the voyager who yields himself fully to them; and, freed for a time from the temptations and entanglements of the shore, with sorrow for the derelictions, the follies, and the sins of the past, makes the language of the Psalmist his own! How doubly happy for all, that there is a fountain of innocency, in which we can wash, and be pure, and from which we may rise and "compass the altar of the Lord," with the assurance of acceptance and salvation!

This Sabbath was distinguished, not only by the commencement of the customary weekly worship of God, but by that, also, of a daily evening sacrifice of adoration and prayer. It is honorable to the principles and moral perceptions of

those who framed "the Rules and Regulations of the Navy," constituting its present code of laws, that the second article in them enjoins the observance of a daily service of religion, on board every ship having a chaplain. It is to be regretted, that an appointment so salutary in its tendency upon the good discipline and moral economy of a crew, should, in so few instances, have been carried into effect. From Captain Ballard, the proposition to introduce it on board the "Delaware," received the most prompt and cordial sanction; and a personal observation of its influence, I am persuaded, is alone required, to secure its general, if not universal adoption, by commanders in the service.

The evening worship of "the Cotter's" fireside—where,

> "Kneeling down to Heaven's eternal King,
> The saint, the father, and the husband prays—"

presents a picture, which might well call forth the inspiration of the poet. In every other grade of life, too, the social altar, encircled, in the sincerity and simplicity of the Gospel, is, in like manner, an elevating and touching sight. But if impressive in the comparative security of an abode on shore, far from the changes and the terrors of the sea, how much more so, when exhibited in the floating dwellings of those whose "home is on the deep!" If He who alone "commands the winds and the waves, and they obey"—He who "rides upon the whirlwind, and directs the storm," is the receiver of our thanksgiving, and the hearer of our prayers, who, before the sailor, should be found in supplication, or who be more frequent or more earnest in praise?

Whatever may be the ultimate results of such a service, there are few who have, for a first time, witnessed it, who will not bear testimony to its impression on the eye, even if they have not felt its influence on the heart. I shall never forget the moral spectacle presented, each successive night, by our noble ship, when—as the summer's sun sank tranquilly to a watery bed in the midst of the ocean—at the accustomed call, her quarter deck became thronged with the hundreds of her crew, in quietness and reverence, to surround a star-spangled altar. A whisper might be heard in the

silence around, while the watches in the tops would lean over from their lofty stations, to catch the words of worship from below. More than once, during the passage, as, with the closing hymn, each turned to his place of duty, I have seen tears trembling in the eyes of some, who, to judge from form and feature, were little used to weep.

The man-of-war's-man, with all his recklessness, and, too often, degrading vices, has, in many cases, moral sensibilities and affections of the heart, which bring him, where the means of grace are presented, within the pale of hope; and I have never yet been a month on board ship, where, to the preaching of the Sabbath, there was added a daily evening prayer, without hearing from some troubled spirit, under circumstances to forbid a doubt of sincerity in the case, the question—"What shall I do to be saved?" followed, not unfrequently, by the resolution of the repenting prodigal, "I will arise, and go unto my father, and will say unto him, Father, I have sinned against Heaven, and in thy sight, and am no longer worthy to be called thy son; make me as one of thy hired servants!"

The promise of a prosperous and happy voyage, given in the beauty of the weather and other propitious circumstances, in which we left our moorings at New York, did not prove deceptive; and every thing connected with the passage to France, was of the most grateful and cheering character. The Atlantic—not famed for being over courteous to those who commit themselves to her bosom—was all blandness and smiles to the family of the distinguished and amiable statesman, we were bearing to the French Court; and, with the aid of bright skies, balmy evenings, and moonlight nights, must have flattered even the ladies belonging to it, into a belief that, "*the pleasures of the sea*," is not altogether a delusive phrase.

To a landsman, a ship-of-the-line, with her thousand souls on board, seems only like a bee-hive, full of uproar and confusion; while, in truth, throughout the whole, in every department, there is the most perfect system and order. Every individual of every rank is classed, named, and stationed at a particular point; the duty of each in his place clearly defined;

and whatever is to be done, accomplished with much of the regularity and exactness of a machine, operating by the same number of wheels.

The necessity of keeping a crew newly shipped, in constant exercise at their varied duties, to render them prompt and skilful in the performance of every thing required of them, afforded our passengers a full opportunity of witnessing, in practice, the entire economy of the service; and of becoming familiar, not only with the evolutions of the ship itself, under various circumstances, but with the scenes exhibited in a preparation for battle—the stationing of the men, the working of the guns, and the uses of the boarding-pike and battle-axe, and other implements of war, in time of action. Every day, almost, was made, in this manner, to furnish the amusement of an hour or two, for them, in the active and vigorous exercise of the ship's company—not unfrequently entered into with such spirit, by all hands, as to present to the imagination no little of the reality of a desperate conflict upon the sea.

In one or two instances, the well-known sounds of the drum and fife, "beating to quarters," at the dead of night—when all the crew except the watch on deck were buried in sleep—brought every man, with a single spring, from his hammock. To have this snugly lashed and carried on deck, to be stowed in the nettings, is a first duty in such cases; and, if I do not greatly mistake, in one, at least, of these instances, in seven minutes from the first tap of the drum, the last hammock was thus disposed of, and in less than ten minutes, every deck brilliantly illuminated with its ranges of lanterns, and every battery in readiness for battle—speaking well for the promptness and activity of a crew, scarce yet six weeks organized.

On another occasion, during a calm, while the ship, regardless of her helm, lay sluggishly upon an undulating sea of seeming glass, the roar of our cannon was added, for two or three hours of the morning, to the ordinary exercise at the guns, to test the skilfulness of the officers and men in the elevation and pointing of their pieces, by firing at a target formed of a cask, carried by a boat to a proper distance. One of the most animated and exciting scenes of the voyage

was thus produced, as every shot told that the "stripes and stars of our national banner" are not less in the keeping of the practised eye of skill, than of the dauntless heart of bravery.

The same day was more than ordinarily one of incident in the voyage. While the firing was still continuing, the sea around the ship was seen, for a first time, to be filled with the inhabitants of the deep—schools of the most beautiful dolphins, decked with blue, and violet, and gold; countless numbers of the bonetta and gar-fish; and the ferocious shark, with his faithful little attendant, the pilot. A shark seems the object of as fix[illegible] and natural an enmity to the sailor, as the viper is to a resident on shore, and no opportunity is lost of attempting his destruction. Permission was readily granted to infringe the decorum of the quarter-deck, by the bustle of an effort from the poop, to secure the monster. A suitable hook and line was let down, with a bait of pork, as he played lazily, but warily, beneath the stern; and in a few moments, having seized it with a fatal swallow, he was hauled triumphantly on board, by a hundred of the crew. The decks trembled beneath his thrashing in the struggle, while the force with which he snapped his jaws in a vain attempt to bite, might be heard over half the ship.

This feat was scarce accomplished, before we were suddenly thrown into a more thrilling state of excitement. Just as the gentle fannings of a light breeze had put headway again upon the ship, the cry—"A man overboard!" "A man overboard!" echoed widely around. The tranquillity of the sea, and the sluggishness of our movement, with boats just hoisted up, and ready in a moment again to be lowered, prevented the degree of agitation which the alarm, under different circumstances, might have produced. Still, as the poor wretch—while the life-buoy was cutting away, and a boat being lowered—was seen floundering just beneath the counter, as if unable to swim, and evidently in a state of terror, which deprived him of all presence of mind, and exposed him doubly to the danger of perishing, it became a doubt whether he would not sink before rescue could be brought, even at the distance of a few yards. He recovered himself,

however, so far as to perceive the life-buoy within reach, and to seize hold of it with a grasp which kept his head above water, till pulled into a boat.

It proved to be a poor land-lubber—a young shoemaker, little accustomed to the water, and never before at sea—who had tumbled overboard in an attempt, by stealth, and contrary to orders, to hang some clothes in the main-chains, to dry. After he had been brought in safety to the deck again, though still haggard, and incapable of supporting himself, I could scarce suppress a smile at the recurrence to my mind, of an anecdote related not long before, by a fellow officer, of an accident of the kind, occurring during his last cruise, presenting the strongest possible contrast to this, both in its circumstances of weather, and in the exhibition of character in the principal actor in the scene.

A captain of the maintop, "the darling of the crew"—both in figure and in character the *beau ideal* of a tar—ever the first to hear an order, and the quickest to obey, would occasionally, in the temerity with which he performed his duty, run out to the main yard-arm without touching any thing for support, trusting to the lift of the yard to bring him up safely. One afternoon, when it was blowing a gale, and the ship already reduced to reefed topsails, on some new order being given, he was hardy enough to venture this feat; but missed his grasp at his accustomed hold, and in full storm rig, of monkey jacket and tarpaulin, plunged, feet foremost, into the sea. When he rose again, he was already some distance astern, in the wake of the ship. The commander was on deck, and had seen him fall. Springing to the taffrail, he quickly called out to him, "Keep up your cheer, my good fellow! we will soon be after you!"—to which the sailor, as he stood erect, treading the water as composedly as if sporting in a summer sea, while with one hand he aided in buoying himself up, and with the other, in the absence of his hat, which had been lost in his plunge into the water, gave the accustomed touch to the dripping locks upon his forehead, replied with a cool "aye—aye, sir!" at the top of his voice, as if only in answer, from his station aloft, to an ordinary order from the quarter deck.

Early on the morning of the 11th of September, after a night of almost Egyptian darkness, with squalls of wind and rain, at the entrance of the British Channel, we received an English pilot on board. No land was in sight; but the Start, a conspicuous headland on the English coast, was just abreast of us, twenty-five miles distant—a position, as thus given to us by the pilot, corresponding precisely with that previously marked upon the chart, by Mr. Moores, our sailing-master, both from chronometer, and lunar observation.

All sail was immediately set before a fresh breeze, and our course laid for Cherbourg. Numerous vessels were soon seen, in every direction around. Before mid-day, "the Caskets," surmounted by light-houses, were in sight, followed by the islands of Guernsey and Alderney, and the coast of France in the neighborhood of cape La Hogue; and, shortly after two o'clock, passing inside the breakwater at Cherbourg, we rounded to, in a freshness of breeze, amounting almost to a gale, and dropped anchor abreast of the town, immediately astern of two French ships of war—twenty-eight days, to an hour, after our departure from Sandy Hook.

NEW WORK ON NAVIGATION.

By Passed Midshipman M. F. Maury, of the U. S. Navy.

A NEW THEORETICAL AND PRACTICAL TREATISE ON NAVIGATION: in which the Auxiliary Branches of Mathematics and Astronomy, comprised of Algebra, Geometry, Logarithms, Plane and Spherical Trigonometry, the Motions of the Heavenly Bodies, Tides, Variation of the Compass, &c, &c, are treated of—also, the Theory and most simple methods of Finding Time, Latitude, and Longitude, by Chronometers, Lunar Observations, single and double Altitudes, are taught, together with a new and easy plan for Finding Diff. Lat. Dep. Course and Distance. By M. F. MAURY, Passed Midshipman in U. S. Navy. 1 vol. 8vo. Philadelphia: Key & Biddle.

We are happy to announce the speedy appearance of this important publication. It was with great pleasure we learned, some months since, that Mr. Maury was engaged in a work of the kind. Our knowledge of his peculiar talents for mathematical and nautical pursuits, and of his varied attainments in the exact sciences, led us to place a confidence in the value of the production, which, we are happy to have confirmed, by the judgment of gentlemen of distinguished science, to whose examination it has been submitted. As soon as it shall be published, we shall furnish an analysis of the work, and a more extended notice of its merits; and in the mean time, take pleasure in giving place in our pages to the following testimony in its favor, from E. C. Ward, Esq., the experienced and able Professor of Mathematics, attached to the naval station of New York.

"I have had much pleasure in the examination of "A New Theoretical and Practical Treatise on Navigation," by passed midshipman Maury. The plan and arrangement are original, and contain little or nothing superfluous. Every part of it appears to be as clear and intelligible as the nature of the subject will admit.

"Such a work has long been needed in our naval schools, and on board our vessels of war. I intend to introduce it in the naval school on this station, and recommend it to be used by all the Professors of Mathematics, and Nautical Science, in the Navy."

MISCELLANY.

UNIVERSAL SEA LANGUAGE.

The following is a copy of a paper presented to the British Association, by Sir John Ross, but which could not be entered in the proceedings, according to the existing relations, as referring to a printed work.

"This Universal Sea Language is a complete system of communications between the crews of ships of different nations, without any knowledge of each other's language. This ingenious and simple code of signals was first communicated to me by the gallant inventor, Captain Rhode, of the Royal Danish Navy, at Copenhagen, in July, 1834; and in September last, I had the honor of submitting the English MS. to our excellent King, who, having perused it with attention, commanded me to transmit it to the Lords Commissioners of the Admiralty, at the same time expressing his high approbation of the system. Here, however, it met with some delay, probably from the changes which took place in that board, and from the circumstances that no less than three codes of signals were at the same time under the consideration of their lordships; and it was not until April last, when I had an interview with Lord Auckland, that their report on this interesting subject was obtained—this could not but be favorable, and the usual number of copies were subscribed for, as also by the Hon. E. I. Company, the Committee of Lloyds, Corporation of the Trinity House, &c, and at length the English edition is in progress. The French edition, which is also a translation from the original Danish, has been already printed, the government having subscribed for no less than two hundred copies. The German and Spanish translations are soon to follow.

"The advantages of this method of communication by signal, over every other, are briefly these: In the first place, it will be found by far the cheapest, the whole expense being

the price of the book, which is only sixteen shillings; the purchase of flags or other symbols being unnecessary. Secondly, the only materials required on board any ship, are the flags under which she sails, jack, ensign, and pendant, (the color being immaterial) and two white flags, for which two table cloths, or if there is none on board, two shirts, or any thing that will represent a flag will suffice; so that every thing required is to be found even in the smallest craft. By those simple and ready means, communications of any, and of every kind, may be made by an English vessel to a foreign one, and *vice versa*, without the least knowledge of each other's language, and under circumstances of peril and distress which have rendered every other mode impracticable. Again, those on the sea-coast, who would wish to save their fellow creatures from a watery grave, might point out to the stranger an unknown harbor or creek, or the best place to run on shore, and by these invaluable signals, convey to a perishing crew of any nation every information required to assist their humane endeavors; while, on the other hand, the crew of a stranded ship might convey to the spectators their perilous situation, and every thing that is requisite—even the perishing foreigner's last farewell to relations and friends.

"I can safely assure the Association, that during my services in His Majesty's Navy, of above forty years, had I been in possession of these signals, and, had they been generally distributed and published in different languages, as they are now intended to be, I should have witnessed the saving of hundreds of lives, and thousands of pounds in valuable property."—*Athenæum.*

MEASUREMENT OF TONNAGE.

The following is given in a Parliamentary paper, just published in England, as the revised rule of the Admiralty Commission on this subject.

Divide the length of the upper deck, from the after part of the stem to the fore part of the stern post, into six equal parts.

Depths—At each of those points of division, measure in feet and decimal parts of a foot the depths from the under side of the upper deck to the ceiling of the limber strake. In the case of a break in the upper deck, the depths are to be measured from a line stretching in continuation of the deck.

Breadths—Divide each of these depths into five equal parts, and measure the inside breadths at the following points: *videlicit*, at one-fifth and at four-fifths from the upper deck at the foremost and aftermost depths; at two-fifths and at four-fifths from the upper deck at the midship depth, and at one-fifth from the upper deck, at each of the two remaining depths.

Length—At half the midship depth, measure the length of the vessel from the after part of the stem to the fore part of the stern post. Then add twice the midship depth to the depths at the foremost and aftermost points of division, for the sum of the depths; and for the sum of the breadths add together the upper and lower breadths at the foremost and midship divisions, the upper and twice the lower breadths at the aftermost division, and the single breadth measured at each of the two remaining divisions.

Then multiply the sum of the depths by the sum of the breadths, and this product by the length, and divide the final product of 3500, which will give the number of tons for register.

MEASURES IN LENGTH.

Measures in length are the distance of one object from another, in some agreed standard.

A line is the 10th of a digit, and the 100th of a foot.

A geometrical pace is 4.4 feet English; and an English mile contains 1200, or 1760 yards, or 5280 feet.

A Scotch mile contains 1500 paces; a German mile 4000; a Swedish and Danish mile 5000; the Russian mile 750 paces.

A hand, used in measuring the height of horses, is 4 inches.

A degree of latitude, at the equator, is 69 1-7th English miles.

A surveyor's chain is 4 poles, or 66 feet, divided into 100 links of 7.92 inches. A square chain is 16 poles, and 10 square chains are an acre; 940 acres are a square mile; and 4840 square yards are an acre, 169.58 yards, each way.

The Irish acre is 7840 square yards.

The Scotch acre 1.27 English.

A French arpent 5-8ths of an English acre.

One hundred and twenty-one Irish acres are equal to 196 English.

Forty-eight Scotch acres are equal to 61 English.

Eleven Irish miles are equal to 14 English.

Eighty Scotch miles are equal to 91 English.

A sea league is 3.4536 miles, or the 20th of a degree.

A sea mile is 6078 feet.

A degree at the equator is 365,101 feet, or 69.148 miles, or 69 1-7th nearly. In latitude 66.20, Maupertius measured a degree of latitude, in 1737, and made it 69.603; and Swauburg, in 1803, made it 49.292. At the equator, in 1744, four astronomers made it 68.732; and Lambton, in latitude 12, 68.743. Mudge, in England, makes it 69.148. Cassina, in France, in 1718, 1740, makes it 69.12, and Biot, 68.769; while a recent measure in Spain makes it but 66.63, less than at the equator, and contradicts all the others, proving the earth to be a prolate spheroid, which was the opinion of Cassina, Bernouilli, Buler, and others, while it has more generally been regarded as an oblate spheroid.

Degrees of longitude are to each other in length, as the cosines of their latitude. For every 10° they are as follows:

Equator,	69.2	50°	44.48
10°	68.15	55	39.69
20	65.27	60	24.6
30	59.93	70	23.67
40	53.1	80	12.02

The pendulum which vibrates seconds, 39,1393 inches at London, is the standard for the British measures. One mile is equal to 1618.833 such pendulums.—*Sunday Morning News.*

NAVAL FORCE OF FRANCE.

France has 11 ships-of-the-line, first class, 126 guns each; 23 of second class, 86 guns each; 23 of third class, 82 guns each. This forms a total of 57 ships of war, nearly every one of them built since 1818. Besides this, France has 40 frigates, first class, each of 60 thirty-six pounders; 10 frigates, each of 46 thirty-six pounders; 15 frigates, third class, each of 32 guns; 10 frigates, fourth class, 26 guns each; 24 corvettes, each with from 20 to 32 guns; 16 gun brigs; 27 steamers, the majority of 160 horse power, and each of them well armed. In her arsenals, there are nearly 3000 guns and carronades, for the naval service—enough to fit out 51 ships of the line, 20 frigates, and 20 corvettes. The 57 ships of war (of the three classes) which France now has in commission, or ready for it, are the following:

Ships of the Line—First Class.

L'Ocean, 126 guns
L'Majesteux, 126 guns
L'Austerlitz, 126 guns
Le Wagram, 126 guns
Le Montebello, 126 guns
Le Souverain, 126 guns
Le Trocadero, 126 guns
Le Commerce, 126 guns
Le Friedland, 126 guns
La Ville de Paris, 126 guns
Le Louis XIV. 126 guns

Ships of the Line—Second Class.

Le Jena, 86 guns
Le Foudroyant, 86 guns
Le Diademe, 86 guns
Le Duquesne, 86 guns
Le Magnifique, 86 guns
Le Santi-Petri, 86 guns
Le Neptune, 86 guns
Le Algesiras, 86 guns
Le Suffrein, 86 guns
Le Jupiter, 86 guns
Le Tage, 86 guns
L'Hercule, 86 guns
Le Jemappes, 86 guns
Le Fleurus, 86 guns
L'Ulm, 86 guns
Le Duguay-Frouin, 86 guns
L'Annibal, 86 guns
Le Turenne, 86 guns
Le Henry IV. 86 guns
Le Navarin, 86 guns
L'Ajax, 86 guns
Le Bucentaure, 86 guns
L'Eole, 86 guns

Ships of the Line—Third Class.

Le Tourville, 82 guns
Le Veteran, 82 guns
Le Triton, 82 guns
La Couronne, 82 guns

Le Breslau, 82 guns	Le Genereux, 82 guns
Le Nestor, 82 guns	Le Dugueselin, 82 guns
Le Marengo, 82 guns	Le Bayard, 82 guns
Le Trident, 82 guns	L'Alexandre, 82 guns
La Ville de Marseilles, 82 guns	Le Fontenoy, 82 guns
Le Scipion, 82 guns	L'Achille, 82 guns
L'Orion, 82 guns	L'Inflexible, 82 guns
Le Superbe, 82 guns	Le Diomede, 82 guns
L'Alger, 82 guns	L'Hector, 82 guns

Le Jean-Bart, 82 guns

The following extract of a letter from Toulon, dated Nov. 28, 1835, may be thought worthy of notice in reference to future equipments in the U. S. naval service. "A telegraphic despatch, yesterday, ordered the Maritime Prefect of the Fifth Arrondissement to provide every ship-of-the-line with four howitzer cannon, eighty-pounders, called *a la Paixhans.* Every frigate of the first class is to have two of eighty; steamboats, of one hundred and sixty horse power, three of eighty; frigates of the second and third classes, four of thirty; sloops, four of thirty, and brigs, two of thirty."—*Evening Star.*

METEOROLOGY.

Circular of the American Philosophic Society and Franklin Institution, originally published in the National Gazette, Philadelphia, with the following note to the Editor:

MR. EDITOR—The joint committee signing the subjoined circular, respectfully ask of you to give it publicity in your paper, with the following request; that all editors of newspapers, when they publish accounts of storms, or any other atmospheric phenomena, be particular to mention their dates; if possible, their exact times of beginning and ending. It has already been ascertained, that the snow storm which commenced here (Philadelphia) at half past ten o'clock, P. M. of Saturday the 15th inst., had terminated at Williamsburg, Va., before it commenced here, after having lasted there two days. Very respectfully, J. P. ESPY,

On behalf of Joint Committee.

PHILADELPHIA, January, 1836.

SIR: At a joint meeting of two committees appointed, one by the American Philosophical Society, and one by the committee of Science and the Arts of the Franklin Institute of the State of Pennsylvania, to confer together on the best means of promoting the advancement of Meteorology, held at the Hall of the Franklin Institute, on the evening of the 9th inst., it was resolved that a sub-committee be appointed, to furnish a project for certain simple observations, which may tend to elucidate important points in Meteorology, and which may be at once entered upon, by observers in different parts of our country, and also to present a form of circular, to be forwarded to persons who may be considered competent to carry into effect the above objects.

In conformity with this resolution, and as a preliminary to the introduction of a more extended plan, which the joint committees are now maturing, the following circular has been prepared, and is forwarded to you by the committee. The prime object of this circular is to obtain a complete knowledge of all the phenomena accompanying one or more storms of rain or hail, not only where the violence of the storm is felt, but at and beyond its borders, its beginning and its end.

For this purpose you are requested, immediately on receiving this circular, to commence a journal of the weather, noting the direction of the wind at the surface of the earth, and in elevated strata, as indicated by the clouds, which may frequently be seen at different elevations, moving in different directions; the upper current of all being at Philadelphia, generally from some western point. Let the strength and direction of the wind, and the appearance of the heavens as to clear or cloudy, and the character of the clouds, according to your own mode of description, be noted at least three times a day, as near the following hours as convenient: 7, A. M., 2, P. M., and sunset. Let the heavens, however, be examined very often, so that any sudden change may not pass unobserved, especially in the direction of the wind; and when any occurs, let it be noted, with its time, under the general head of "observations."

The plan which we recommend in observing slow-moving clouds, is to keep the head steady in one place, with the top of a chimney, or some distant fixed object between the eye and any remarkable point of the cloud, until this point shall have moved so far from behind the object, as to leave no doubt of its direction.

As to upper and lower strata, when one passes under the other, there is an optical deception to be guarded against, when the upper one moves with the greatest angular velocity. This deception may generally be avoided, by noticing which cloud is obscured by the other, as they pass. Sometimes, also, an upper current of air may be detected, when there is but one stratum of clouds, if these are of the columnar, snowy-topped kind, which are frequently seen in a hot summer day; as these clouds are frequently formed between two currents, their tops will lean in the direction of the upper current, and, indeed, sometimes be blown off and dissipated, in a direction different from the air below.

We also particularly request, that if you hear of any storms occurring in your neighborhood, you will collect all the information concerning them in your power.

Particularly inquire the course of the wind at the commencement of the storm, and at its termination; the width of the storm; its direction; its velocity; the direction of the wind at its sides; how the wind veers round—whether in different directions at its sides or not; whether, in case of hail, there are two veins, or only one; where there is the greatest fall of rain, near the borders or near the centre of the storm —and whether this fall takes place near the beginning, middle, or end of the storm; whether the clouds are seen moving with the wind or against it, and whether differently among themselves; and every thing else which you think may tend to an explanation of this most interesting phenomenon.

Let the time of beginning and end of all rains be particularly noted; any change in the strength and direction of the wind during their progress, and the quantity as near as possible. Mark the time of meteors, or shooting stars, and auroras, and if possible, the stars through which they pass. These observations, if made by many correspondents through-

out the United States, will elucidate the main object which the committee has in view in the present circular, and it is hoped, greatly assist in giving interest and value to the plan in contemplation. But as many observers may be willing to do more, we will remark that the observations on storms will be much enhanced in value, if accompanied by observations on the "Dew point;" for it may be, that hurricanes never occur only when the dew point is high.

A very simple as well as accurate method of taking the "Dew point," is, to use a thin tumbler of tin, kept very bright and clean on the outside—and in the summer cold water, and in the winter snow or ice, and if necessary, salt, mingled with water—and when these are not at hand, a mixture of muriate of ammonia and nitrate of potash, in equal quantities, pounded very fine, put into the tumbler with water. By any of these means a temperature may soon be obtained, below the "Dew point." When dew settles on the tumbler, it must be carefully wiped off, very dry, and the fluid within stirred with a thermometer—and this must be repeated until the fluid is gradually heated up by the air, so that the moisture ceases to settle; the highest temperature at which it will settle, is the "*Dew point.*"

For observations of the dew point to be of any value, however, they must be made constantly, every day, at least once a day.

Again, some may be unwilling to take the dew point, who would be glad to know it may be obtained, approximately, by the following indirect method:

Take two thermometers that agree, or allow for the difference—cover one of them with a wet white rag, and swing them simultaneously in the air, (for it will not do to let them be at rest, unless the wind is blowing fresh;) when it is discovered that they cease to change by swinging, take one hundred and three times their difference, and divide it by the wet-bulb temperature, and subtract the quotient from the temperature of the naked bulb—the remainder will be the dew point. This formula is founded on experiments from 20° Fahr. to 80°, and does not differ, at either extreme, from the most careful experiments. We cannot refrain from

saying, we are sure that every lover of the science will be richly rewarded for all the pains he may bestow on the dew point, even independent of the results which will undoubtedly be derived from a comparison of these simultaneous observations.

In conclusion, the committee request that, should your occupations prevent you from attending to the subject yourself, you will find in your vicinity a competent observer to take your place.

Please to forward your observations monthly, to the Joint Committee of the American Philosophical Society and Franklin Institute, care of William Hamilton, Actuary of Franklin Institute, Philadelphia, by mail, when a private conveyance is not at hand.

JAMES P. ESPY,
Chairman of Joint Committee.

Gouverneur Emerson, M. D., C. N. Bancker, Alexander D. Bache, *Comm. of Am. Philos. Society.*

James P. Espy, Alex. D. Bache, H. D. Rogers, S. C. Walker, P. B. Goddard, M. D., *Comm. of Franklin Inst.*

Day.	Hour.	Temperature of Air.	Temperature of Wet-bulb.	Dew point.	Course of Wind.	Lower strata of Clouds.	Middle strata of Clouds.	Upper strata of Clouds.	Strength of Wind.	Weather.	Beginning of Rain.	End of Rain.	Barometer.	Observations.

METEOROLOGICAL OBSERVATIONS FOR THE MONTH OF JANUARY, 1836.

Made at the U. S. Naval Hospital, N. Y. Station. Longitude 74° W. Latitude 40° 42′ N. Variation 4° 26′ W. WILLIAM SWIFT, M. D., Surgeon.

Moon	DAY OF THE		THERMOMETER			BAROMETER			WIND DIRECTION			WIND FORCE			WEATHER			RAIN	REMARKS
	Mth.	Week	7 R	Noon	7 S.	7 R	Noon	7 S.	7 R.	Noon	7 S.	7 R.	Noon	7 S.	7 R.	Noon	7 S.		
	1	F.	21	36	30	29.93	29.92	29.88	N. W.	S. W.	S. W.	light	light	light	fair	fair	fair		Jan. 9. Snow, one foot and a half.
	2	S.	31	38	36	29.96	29.98	30.03	S. S. W.	S. W.	S. W.	light	light	light	fair	fair	fair		17. Snow, six inches and a half.
☽	3	C.	32	38	33	30.25	30.33	30.34	N.	N.	N. E. N.	light	light	light	clear	clear	cloudy		18. Slight fall of snow.
	4	M.	32	34	36	30.30	30.22	30.08	N. E.	N. E.	N. E.	mod.	light	light	cloudy	rain	rain		24. Heavy gale in the night. Snow, six inches.
	5	T.	36	34	36	29.94	29.98	30.00	N. E.	N. E.	N. E.	light	light	light	cloudy	rain	rain	1.13	26. Slight fall of snow this morning.
	6	W.	30	32	30	30.26	30.31	30.34	N. E.	N. E.	N. E.	fresh	mod.	mod.	cloudy	cloudy	cloudy		31. Snow, eight inches.
	7	T.	29	35	34	30.33	30.17	30.10	N. E.	N. E.	N. E.	mod.	light	fresh	cloudy	cloudy	cloudy		Fair days, 13; rain on 3; snow on 6.
	8	F.	34	34	34	29.83	29.70	29.64	N. E.	N. E.	N. E.	fresh	fresh	fresh	cloudy	rain	rain	1.48	Prevailing wind, N. W.
	9	S.	33	34	33	29.55	29.48	29 40	N. W.	N. W.	N. N. W.	mod.	fresh	fresh	snow	snow	snow		Quantity of rain, 2.61 inches.
	10	C.	30	36	33	29.27	29.32	29.38	N. N. W.	N.	N.	strong	strong	fresh	cloudy	cloudy	sleet		Quantity of snow, three feet two inches and a half.
◑	11	M.	32	42	34	29 54	29.60	29 61	N. W.	N. W.	N. W.	fresh	mod.	mod.	cloudy	fair	fair		
	12	T.	32	38	37	29 72	29.75	29.83	N. W.	N. W.	N. W.	mod.	mod.	mod.	fair	fair	fair		
	13	W.	30	42	38	29.91	29.94	29.94	S. W.	W.	W.	light	light	light	fair	fair	clear		
	14	T.	30	40	37	29.97	30.00	29.97	W.	W.	N. W.	light	light	mod.	clear	fair	fair		
	15	F.	29	33	28	30.03	30 03	30.03	N. W.	N. W.	N. W.	mod.	mod.	fresh	fair	fair	fair		
	16	S.	12	23	16	30.14	30.22	30.30	N. W.	N. W.	N. W.	fresh	mod.	mod.	fair	fair	fair		
	17	C.	12	26	27	30.10	29.92	29.77	N. W.	N. E.	N. E.	light	light	mod.	cloudy	snow	snow		
●	18	M.	27	36	33	29 51	29.54	29.57	W. N. W.	N. W.	W. S. W.	light	mod.	fresh	cloudy	fair	fair		
	19	T.	23	31	25	29.87	29.93	29.94	N. W.	W.	S. W.	light	light	light	fair	fair	fair		
	20	W.	20	28	22	30.13	30.15	30.18	N. W.	N. W.	N. W.	light	mod.	light	fair	fair	fair		
	21	T.	14	34	32	30.22	30 18	30.06	N. E.	N. E.	S. E.	light	light	light	fair	cloudy	cloudy		
	22	F.	36	44	34	29.69	29 69	29.75	S. W.	S. W.	S. W.	light	light	light	cloudy	cloudy	clear		
	23	S.	21	23	20	30.01	30.22	30.23	N. W.	N. W.	N. W.	mod.	mod.	light	clear	fair	fair		
	24	C.	11	29	26	30.48	30.48	30.47	N. W.	N. E.	N. E.	light	light	light	fair	fair	cloudy		
◑	25	M.	26	30	26	29.44	29.48	29.65	N. E.	N. W.	N. W.	strong	fresh	fresh	sleet	cloudy	fair		
	26	T.	20	32	26	29.93	29.92	29.90	S. W.	S. W.	S. W.	light	light	light	fair	cloudy	clear		
	27	W.	12	20	14	29 96	29.96	29.94	N. W.	W.	N. W.	light	light	light	clear	fair	fair		
	28	T.	6	14	12	29.97	29.97	29.95	N. W.	N. W.	N. W.	light	mod.	mod.	fair	fair	fair		
	29	F.	6	17	14	29.99	30.00	29.98	N. W.	S. W.	S. W.	light	light	light	fair	fair	fair		
	30	S.	18	34	28	29.92	29.88	29.84	S.	S. W.	S. W.	light	light	light	clear	fair	cloudy		
	31	C.	30	40	32	29.64	29.49	29.42	S. E.	N.	N. W.	light	light	light	snow	snow	snow		

RESULT.

THERMOMETER.

Mean temperature for the month	28°
Highest ditto, on the 22d at noon	44
Lowest ditto, on the 28th and 29th, at sunrise	6
Greatest daily variation, on the 21st,	20
Least ditto, on the 8th	00
Range	38

BAROMETER.

	Inches.
Mean atmospheric pressure for the month	29.927
Highest ditto, on the 24th, at sunrise	30.480
Lowest ditto, on the 10th, at sunrise	29.270
Greatest daily variation, on the 17th	.330
Least ditto, on the 15th	.000
Range	1.210

The barometer is elevated about fifty feet above the level of the sea.
The thermometer is exposed at the northern end of the building.
The rain-guage is elevated five feet above the surface of the earth.
The thermometer and barometer were manufactured by Pike & Sons, New-York.

THE TRIAL ROCKS IN THE INDIAN OCEAN.

The Trial Rocks were seen last year [1835] from the Dutch ship Jacobus, on her way from Europe to Java. They were first seen very near in the night, when the ship was hauled off and hove to until daylight; they were then seen again and passed. The captain of that ship gives the longitude by the Chronometer 107° 55′ E. of Greenwich, latitude 29° 35′ S. In a short run afterwards to Java Head, it was found that the Chronometer was 18 miles too far to the Eastward; allowing this error, the longitude would be 107° 35′ East. This is too far East to be in the way of ships which are in the proper track for Java Head, but dangerous to those which are bound through some of the passages of Java.—*Salem Register.*

QUERIES FOR SOLUTION.

1. In Bowditch's Navigator, page 111, it is said, that when the *true* bearing of an object is to the *right* hand of the *magnetic*, the variation is *West;* and again, at page 115, that when the *true* bearing is to the *right* of the *magnetic*, the variation is *East.* How is this paradox to be accounted for?

2. October 1st, 1835, in latitude 40° 41′ N. and longitude 74° W. being at the top of a building, I saw the image of the sun reflected in an artificial horizon, placed on a horizontal plane with the base of the building, which was 100 feet high, and the height of the eye 5.75 feet above the building. Required, the distance from the centre of the artificial horizon to the base of the building?

3. In latitude 16° 40′ N. when the sun's declination was 23° 18′ N. I observed him twice, in the same forenoon, bearing N. 68° 30′ E. Required, the times of observation, and his altitude at each time? W.

PROMOTION IN U. S. NAVY, IN JAN. 1836.

Master Commandant John Gallagher, to be Captain.

DEATHS IN U. S. NAVY, IN 1835.

Captains—John D. Henley, May 23d, on board the U. S. ship Vandalia, in command of the West India squadron. Wolcott Chauncey, Oct. 14th, in command of the Navy Yard at Pensacola.

Lieutenants—William Taylor, Jan. 13th, in the Naval Hospital at Norfolk. John Evans, Feb. 5th, in the Naval Hospital at Philadelphia. Samuel B. Cooke, May 31st, at Portsmouth, Va. David R. Stewart, Aug. 6th, at Girgenti, coast of Sicily. H. J. Auchmuty, Oct. 8th, Westchester, N. Y.

Surgeons—Gerard Dayers, May 26th, at Roxbury, near Boston. Hyde Ray, Sept. 7th, at Annapolis, Md.

Purser—George Beale, April 4th, at Washington.

Passed Midshipman—William C. Farrar, Feb. 24th, near St. Louis, Mo.

Midshipmen—John Banister, June 3d, at Rio de Janeiro. Thomas W. Magruder, July 4th, at Baltimore.

Marine Officer—Lieut. T. M. W. Young, July 7th, at New-York.

OBITUARY.

[*Communicated.*]

Died, at New-York, on the 3d of Jan., GEN. WILLIAM NORTH, aged 83 years.

General North was a native of the State of Maine. He entered the Revolutionary Army at an early period, and in 1777 was appointed Aid-de-camp to Baron Steuben, with the rank of Major. This honorable station he continued to

hold until the close of the war—accompanying the Baron in every engagement, and among others, being with him at the battle of Yorktown. He was subsequently appointed Adjutant General of the American army in 1797, in the short war with France, and filled many other important stations; being for many years a member of the Legislature of the State of New-York, Speaker of the House of Assembly, and Senator in Congress.

Possessed of uncommon personal attractions, with a highly benevolent and well-informed mind, he early won the affections of those around him; while his high sense of honor and lofty integrity commanded the respect of all. Baron Steuben soon became attached to him, with a regard that continued unabated till death; and he numbered among his closest friends many of the proudest names in the history of our country.

General North lived to see the "honored and the loved," with whom he had commenced his career, fall, one by one, from his side, until he stood as it were alone—a link between the present and the past—a noble survivor of a noble age! Time, however, had laid his hand but gently upon him. Age had not dimmed the lustre of his eye, nor impaired the manly vigor of his frame. His form was still erect, his step elastic, and his whole bearing noble and commanding. His manners were refined, and marked with the courtesy of the accomplished gentleman. He was the delight of the social circle. With a freshness and even youthfulness of feeling seldom surpassed, and a brilliancy of wit that never tired, he drew from the storehouses of memory, and from every present object and event, treasures rich and inexhaustible. The young hailed his approach, as they would a festival, and all welcomed him with joy.

But alas! he too now sleeps with the companions of his early years; and those who knew and loved him, feel well assured that he is realizing the bright vision of his own beautiful "Lullaby"—

> "—When the weary march is ended,
> And HALT! is ordered from on high,
> Angels, gathering round the soldier,
> Shall sing his requiem Lullaby."